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ABSTRACT

Intended to assist both the private and public sectors to locate and utilize technological expertise within the federal laboratories, this directory lists the federal laboratories and centers that are affiliated with the Federal Laboratory Consortium and describes the area of technological expertise they can make available to solve problems. This document updates the September 1978 volume by supplying revised pages and new sections with instructions on where to attach the new sheets and which old sheets to replace. The body of the document is organized into five sections: (1) a map that identifies the six geographic regions that comprise the consortium: (2) an alphabetical list of the consortium laboratories, including a detailed listing of the technology application areas that exist at these laboratories and brief descriptions of the specific work that is being done in each area: (3) a list of the member laboratories by geographic region, grouped under the federal department to which they belong and identified by city and state: (4) another geographic listing of the member laboratories, arranged alphabetically under each region by name and including the name of the consortium representative for each, with his address and telephone number: and (5) a general index, listing general application areas alphabetically, under which more specific sub-areas are identified: for each sub-area, the laboratories having that particular expertise are listed by acronym or abbreviation. (Author/JD)

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FEDERAL LABORATORY CONSORTIUM

RESOURCE DIRECTORY

November 1979

**Prepared by
the
FEDERAL LABORATORY CONSORTIUM
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INTERGOVERNMENTAL SCIENCE &
PUBLIC TECHNOLOGY DIVISION
OF THE
NATIONAL SCIENCE FOUNDATION**

NSF/RA–79–0268

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FEDERAL LABORATORY CONSORTIUM
RESOURCE DIRECTORY
(NSF-77-047)

SEPTEMBER 1979 UPDATE

In order to update the directory and make it more useful and at the same time to avoid reprinting the entire volume, we are supplying revised pages and new sections. Add the attached sheets to your directory, dated September 1978, and replace obsolete sheets, as directed below. (Note that Section II now begins with page II-25.)

Add note to cover: Revised, September 1979.
Remove all green divider sheets.
Add pp. i-iv (Contents).
Remove pp. 1 through 4; add new pp. 1 through 3.
Add Section I divider sheet before p. I-1.
Remove pp. I-1 through I-36; add new p. I-1.
Remove pp. II-1 through II-23 and discard.
Add Section II divider sheet before p. II-25.
Add pp. II-36a through II-36c after p. II-35.
Replace pp. II-37 and -38.
Replace p. II-41 through II-44.
Replace p. II-53.
Replace p. II-57.
Remove pp. II-69 through II-76 and discard.
Replace pp. II-81 and -82.
Replace p. II-91 through -96 with pp. II-91 through II-96f.
Add pp. II-98a through -98c after p. II-97.
Replace p. II-103.
Add pp. II-108a and II-108b after p. II-107.
Replace pp. II-109 and -110.
Replace pp. II-113 through II-116.
Add pp. II-118a through -118c after p. II-117.
Remove pp. II-119 and -120 and replace with II-119 through II-120c.
Replace pp. II-151 and -152.
Replace pp. II-177 and -178.
Replace pp. II-181 through II-190.
Replace pp. II-193 and -194.
Add pp. II-196a and -196b after II-196.
Replace pp. II-219 and -220.
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Replace pp. II-233 and -234.
Replace pp. II-239 through II-241.
Replace pp. II-251 through II-254.
Replace pp. II-259 through II-264 with pp. II-259 through II-260.
Replace pp. II-275 through -278.

Replace pp. II-283 through -286.
Replace pp. II-303 and -304.
Replace pp. II-313 and -314.
Replace pp. II-323 through -326.
Add pp. II-328a and -328b after p. II-327.
Replace pp. II-331 and -332.
Replace p. II-335.
Replace p. II-339.
Replace pp. II-345 and -346.
Remove pp. III-1 through III-23.
Add new Section III (pp. III-1 through III-12) and divider sheet.
Add new Section IV (pp. IV-1 through IV-10) and divider sheet.
Add new Section V (pp. V-1 through V-23) and divider sheet.

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AFAPL Air Force Aero Propulsion Laboratory II-31

AFESC Air Force Engineering and Services Center . . . II-36a

AFGL Air Force Geophysics Laboratory II-37

AFML U.S. Air Force Materials Laboratory II-39

AFWAL U.S. Air Force Wright Aeronautical Laboratory . II-43

AFWL Air Force Weapons Laboratory II-45

AMD USAF Aerospace Medical Division II-49

AMMRC Army Materials and Mechanics Research Center . . II-55

AMRDC Army Medical Research and Development Command . II-59

ARRADCOM U.S. Army Armament Research and Development Command II-61

BIFC Boise Interagency Fire Center II-65

BNL Brookhaven National Laboratory II-67

CEL Civil Engineering Laboratory II-77

CERL Construction Engineering Research Laboratory . . II-83

CGRDC Coast Guard Research and Development Center . . II-91

CSL Chemical Systems Laboratory II-93
DTNSRDC David W. Taylor Naval Ships Research and Development Center II-96a
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ERL Environmental Research Laboratory, Narragansett II-97
ESRLR Environmental Sciences Research Laboratory . . . II-98a
ETL U.S. Army Engineer Topographic Laboratory . . . II-99
FBI FBI Laboratory II-103
FFL U.S. Forest Service — Forest Fire Laboratory . II-105
FHRS Fairbank Highway Research Station II-107
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HDL Harry Diamond Laboratories II-111
HEL U.S. Army Human Engineering Laboratory II-117
HERLR Health Effects Research Laboratory II-118a
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IERLR Industrial Environmental Research Laboratory - Research Triangle Park II-120a
INT Intermountain Forest and Range Experiment Station II-121
ITS Institute for Telecommunication Sciences II-123
KSC Kennedy Space Center II-125
LaRC Langley Research Center II-143
LASL University of California — Los Alamos Scientific Laboratory II-153

LBL	Lawrence Berkeley Laboratory	II-173
LeRC	NASA Lewis Research Center	II-183
LLL	Lawrence Livermore Laboratory	II-191
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NVEOL Night Vision & Electro-Optics Laboratories . . . II-285

NWC Naval Weapons Center II-287

NWSC Naval Weapons Support Center II-305

ORNL Oak Ridge National Laboratory II-313

PNW Pacific Northwest Forest and Range Experiment Station II-315

PSW Pacific Southwest Forest and Range Experiment Station II-317

RADC U.S. Air Force Rome Air Development Center . . . II-319

RIBSS Army Research Institute for the Behavioral and Social Sciences II-325

RM Rocky Mountain Forest and Range Experiment Station II-327

SDEDC USDA -- Forest Service Equipment Development Center - San Dimas II-328a

SE Southeastern Forest Experiment Station II-329

SL Sandia Laboratories II-331

SO Southern Forest Experiment Station II-337

TARADCOM U.S. Army Tank - Automotive Research & Development Command II-339

TSC Transportation Systems Center II-341

USGS U.S. Geological Survey II-343

WFC Wallops Flight Center II-345

WES U.S. Army Engineer Waterways Experiment Station II-347

III. Member Laboratories by Geographic Region III-1

IV. Member Laboratory Representatives by Geographic Region IV-1

V. Index of Application Areas V-1

INTRODUCTION

Although there are many definitions of technology transfer within the Federal Laboratory Consortium, technology transfer is generally described as the process by which existing knowledge, facilities, or capabilities developed under federal R&D funding are transferred to fulfill actual or potential public or private needs.

The purpose of the Consortium is to increase the use of the member laboratories' unique technical expertise and R&D products toward the solution of problems facing other government agencies and private industry. This technology transfer program emphasizes person-to-person communications between the users and suppliers in the civilian sector and the resource people in the federal laboratories. The development of a well-organized information system and the continuous involvement of the users and suppliers in the problem definition and transfer process along with the discreet use of linking agents, or technology transfer "brokers," to bridge the communication gap between researchers and users represents the core program activity.

Within the Federal Laboratory Consortium, technology transfer is accomplished in a variety of ways. In one approach, one of the DoD Consortium laboratories may perform civilianoriented R&D work with funding provided by such requesting institutions as federal, state, or local government agencies. These R&D projects are applied to civilian problems, but the solutions are based upon earlier research performed for mission-oriented purposes. Thus, the American taxpayer derives double benefit from the military R&D expenditure. Other members of the Consortium, such as DOE or EPA, are specifically chartered and funded to work in the civilian area. Therefore, they are directing their technology transfer efforts toward the increased use of their research results by decision makers and operational agencies in the public and private sectors.

In addition to performing R&D activities and pushing for greater use of their R&D products, the Consortium transfers its technology in other ways. Consortium representatives assist state and local government agencies in a variety of nonrefundable ways, such as serving on scientific advisory boards, acting as consultants to specialized groups (e.g., law enforcement, pollution control agencies, or fire prevention committees), providing library services, and identifying sources of surplus government equipment.

One major service provided by the Consortium is in the area of brokerage. Because of the nature of their activities, Consortium representatives are frequently exposed to new technologies developed by private enterprise, by state or local governments, or by another federal laboratory. Therefore, these technology transfer coordinators can serve as "technology brokers" by bringing together the individual or agency that has a problem or need with agencies who have already solved it or who at least are working in the area. This broker service can be especially useful for local governments who are often unaware of the scientific support available in the federal laboratories.

Private industry can also benefit from the Federal Laboratory Consortium. For example, through the acquisition of government patents originating from these laboratories, a private company can produce and sell a product in the commercial marketplace without having to expend funds for basic R&D. Perhaps most frequently, industry can benefit by becoming the continuing supplier of a service, process, or product initially demonstrated as satisfying a need by one or more of the Consortium laboratories.

How can the Federal Laboratory Consortium help your city department, county agency, state organization, or federal agency? What assistance can the Consortium give to your company? It is impossible to say unless there is a person-to-person contact between yourself and a member of the Consortium.

You may contact the Consortium laboratory representative nearest to you or the permanent Washington representative located in the Office of Intergovernmental Science and Public Technology, National Science Foundation. This representative maintains continuing contact with technology transfer in other federal, state, or local agencies as well as in private industry and assists in policy development relating to matters concerning the Consortium. Write or call the Federal Laboratory Program Manager, Room 1101, National Science Foundation, 1800 "G" Street NW, Washington, D.C. 20550 (telephone: 202-634-7996).

To bridge the present communication gap between the Consortium and you, a mechanism is required to provide you with information on the resource capability that exists within the federal laboratories. The Federal Laboratory Consortium Resource Directory was designed for this purpose.

This directory lists the federal laboratories and centers that are affiliated with the Federal Laboratory Consortium and describes their areas of technological expertise that can be made available to help solve problems. It has been compiled to assist you in locating and utilizing technological expertise within the federal laboratories.

Section I of this directory is a map that identifies the six geographic regions that comprise the Consortium. The dots on the map show approximate locations of many of the laboratories.

Section II, the core of the directory, contains an alphabetical list of the Consortium laboratories. A detailed listing of the technology application areas that exist at these laboratories is included, along with a brief description of the specific work that is being done in each application area.

At the back of the directory are several sections designed to aid you in finding the laboratories most likely to have the expertise you are looking for. Section III lists the member laboratories by geographic region. Under each region the laboratories are grouped by the federal government department they come under. The location of each laboratory is identified by city and state.

In Section IV, the member laboratories are again listed by geographic region. Under each region, they are listed alphabetically, along with the name of the Consortium representative for each laboratory, with his address and telephone number. Not included in Section II

are a few Consortium laboratories whose detailed listing of expertise was not obtained in time for incorporation into this revision. These laboratories are listed here in Section IV, along with their Consortium representatives, who may be contacted for detailed information.

The last section (Section V) is a general index. General application areas are listed alphabetically. Under each general listing, more specific sub-areas are listed. For each sub-area, a list of the laboratories having that particular expertise is given by the acronyms or abbreviations of the laboratories.

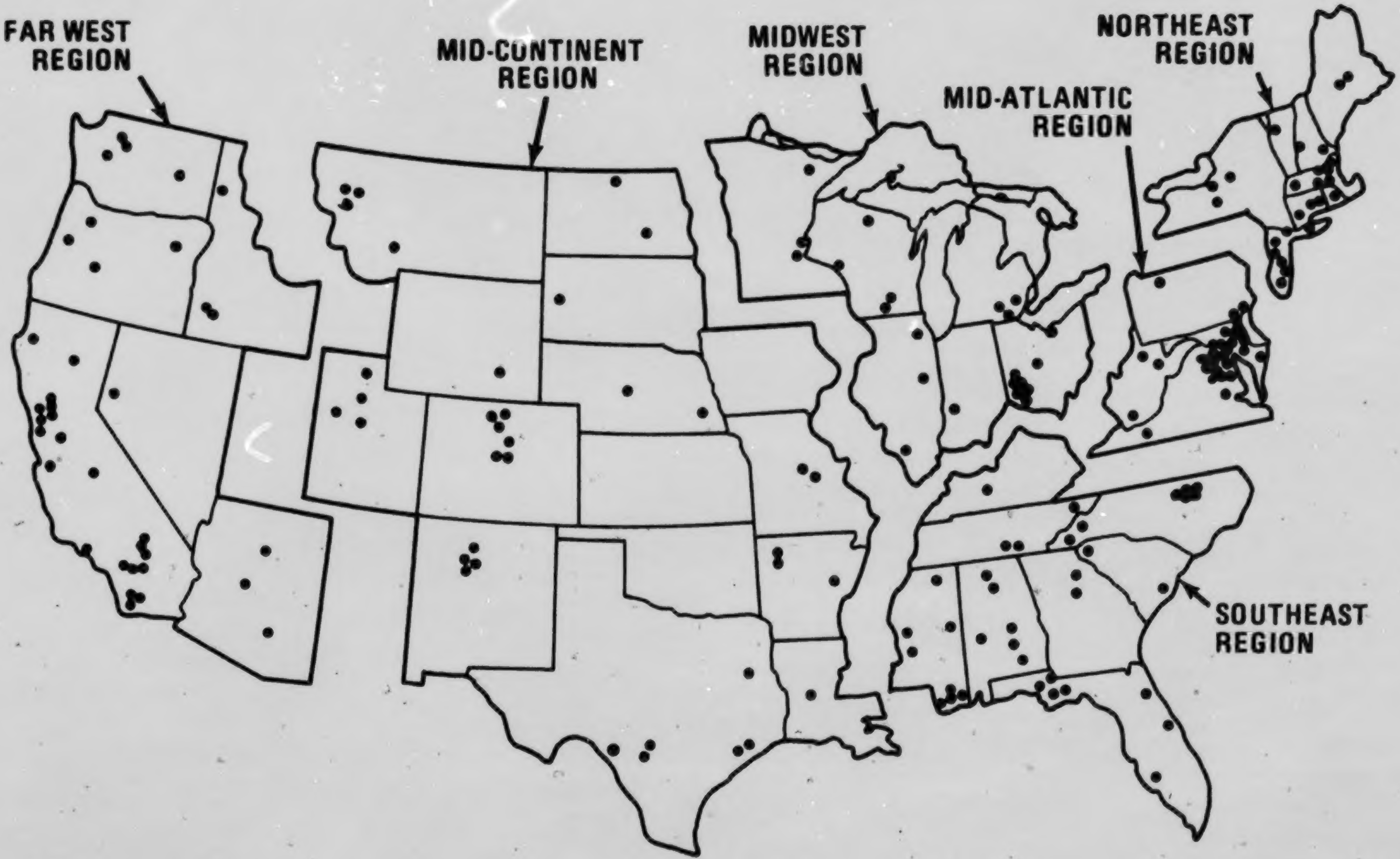
If you know the name of a laboratory you are looking for, you simply look it up alphabetically in the core of the directory. If it is not there, check in Section IV, and see if a representative is listed. If instead you know the application area and you want to find the laboratories associated with it, you look in Section V to find the abbreviations of the laboratories of interest. If you need to find what laboratories the abbreviations stand for, check the Contents (page i), which lists all of the labs in Section II by abbreviation and page number.

If you want to find a laboratory in a particular region, you can use the map in Section I and the listing in Section III to locate the laboratory. Section IV may be used to find the representative's name and address.

SECTION I.

MAP OF GEOGRAPHIC REGIONS

FEDERAL LABORATORY CONSORTIUM


FAR WEST REGION
MID-CONTINENT REGION
MIDWEST REGION
MID-ATLANTIC REGION
NORTHEAST REGION
SOUTHEAST REGION

SECTION II.

ALPHABETICAL LIST OF MEMBER LABORATORIES

AIR FORCE ENGINEERING AND SERVICE CENTER
ENGINEERING AND SERVICES LABORATORY
Tyndall AFB, Florida 32403

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transfer	Program planning, development, execution and management, contract management. Technology Transfer program.
CHEMISTRY	
Analytical Chemistry	Aqueous chemistry, atmospheric photochemistry, pollutant transport mechanisms, advanced pollutant monitoring technique development.
CIVIL ENGINEERING	
Civil Engineering	Airfield design and maintenance, water and wastewater treatment.
Construction Equipment, Materials and Supplies	Paving, road and air field materials.
Soil and Rock Mechanics	Soil stabilization, airfield pavement evaluations.
ENERGY	
Fuels	Conversion of solid waste to energy.
Solar Energy	Solar-assisted heat pumps, solar heating, solar cathodic protection.
Miscellaneous Energy Conversion and Storage	Wind generators and conversion, alternate energy for remote sites, solar-assisted heat for homes, waste heat recovery.
General	Energy conservation techniques, energy monitoring and control systems.
Environmental Studies	Environmental chemistry of alternate fuels.

APPLICATION AREA	EXPERTISE
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	Air quality assessment modeling, aircraft engine emission measurements.
Solid Wastes Pollution and Control	Optimum routing, recycling, resource recovery.
Water Pollution and Control	Electroplating wastes, industrial wastes, photo waste, water quality assessment modeling, cascade water reuse, pollutant identification.
Environmental Impact Statements	Environmental engineering.
INDUSTRIAL AND MECHANICAL ENGINEERING	
Nondestructive Testing	Airfield pavement evaluations, ultrasonic evaluation of delaminations and water in foam beam, and honeycomb aluminum panels.
MATERIALS SCIENCES	
Corrosion and Corrosion Inhibition	Cathodic protection, protective coatings.
NATURAL RESOURCES AND EARTH SCIENCES	
Natural Resource Management	Conservation and management plans for Air Force bases and ranges.
Forestry	Management plans for Air Force installations.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Economic and Community Development	Comprehensive planning.

APPLICATION AREA	EXPERTISE
Police, Fire and Emergency Services	Structural and crash rescue fire equipment, systems and techniques. Advanced fire fighting agents, pollution control fire fighting agents.
Energy	Energy conservation, monitoring and control systems, conversion of solid waste to energy.
Environment	Environmental impact assessments, pollution abatement systems, land use planning.

TRANSPORTATION

Air Transportation	Evaluation of airfield pavement roughness. Evaluation of skid resistance characteristics of airfield pavements techniques to improve skid resistance, warm fog dispersal.

URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT

Environmental Management and Planning	Environmental planning, pollution emission modeling, waste recycle and resource recovery.
Transportation and Traffic Planning	Comprehensive planning.

CONTACT:
Robert E. Brandon
Deputy Director, Engineering and Services Laboratory
Tyndall AFB, Florida 32403
Telephone: (904) 283-5287
Autovon: 970-5287

AFGL
(Northeast Region)

AIR FORCE GEOPHYSICS LABORATORY
Hanscom Air Force Base
Bedford, Massachusetts 01731

APPLICATION AREA	EXPERTISE
ASTRONOMY AND ASTROPHYSICS	
Astrophysics	
Solar Physics	
ATMOSPHERIC SCIENCES	
Aeronomy	
Meteorological Data Collection, Analysis and Weather Forecasting	Atmospheric dynamics, densities and winds as measured from satellites, rockets and balloons and remote probing techniques. Expertise in assessing weather and climate at remote locations, in particular as affecting aviation.
Meteorological Instruments and Instrument Platforms	
CHEMISTRY	
Physical Chemistry	Application of physical chemistry techniques such as mass spectrometers and molecular beam apparatus to study chemical reaction rates in the natural atmosphere and stratosphere. Studies of photochemical processes.
DETECTION AND COUNTERMEASURES	
Infrared and Ultraviolet Detection	
Nuclear Explosion Detection	
Optical Detection	

APPLICATION AREA	EXPERTISE
Seismic Detection	
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution	Expertise in contamination of atmosphere by aircraft exhaust products or fuel dumping.
Environmental Impact Statement	Preparation of Environmental Impact Statements for Air Force systems.
NATURAL RESOURCES AND EARTH SCIENCES	
Natural Resource Surveys	Expertise in all phases of geodetics and gravity.
Geology and Geophysics	Expertise in seismology and geology, crustal physics.
PHYSICS	
Optics and Lasers	Expertise in infrared and passive microwave remote sensing, in particular as applied to atmospheric studies.
Radio Frequency Waves	Expertise in all aspects of ionospheric physics and electromagnetic propagation.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Environment	

CONTACT: John N. Howard
Air Force Geophysics Laboratory
Hanscom Air Force Base, MA 01731
Telephone: (617) 861-3601
Autovon: 478-3601

APPLICATION AREA	EXPERTISE
Lubricants and Hydraulic Fluids	Chemical, mechanical and physical properties, performance, and production of all types of oils, lubricants, and hydraulic fluids; lubricant and hydraulic fluid additives.
Materials Degradation and Fouling	Aging, erosion, wear, weathering, deterioration, decay; effects of radiation on materials; biodeterioration, including fungus deterioration; corrosion and corrosion inhibition; husting; embrittlement; exfoliation.
Miscellaneous Materials	Leather, fur, refrigerants, straw, petroleum, waxes, etc.
Nonferrous Metals and Alloys	Microstructure, physical properties and mechanical properties.
Plastics	Development and characterization of new structural plastics and composites, structural adhesives and ablative plastics and composites.
Refractory Metals and Alloys	Physical metallurgy of refractory metals and alloys.
Solvents, Cleaners, and Abrasives	Abrasive resistant coatings.

PHYSICS

Fluid Mechanics	Theoretical and experimental studies of the dynamics and statics of fluids and of relative motion between fluids and solid bodies. Includes aerodynamics and hydrodynamics.

CONTACT:
COL Martin Alewine
Air Force Materials Laboratory
ATTN: AFML/NA
Wright-Patterson AFB, Ohio 45433
Telephone: (513) 255-4528
Autovon: 785-4528

U.S. AIR FORCE WRIGHT AERONAUTICAL LABORATORY
Wright Patterson AFB, Ohio 45433

APPLICATION AREA	EXPERTISE
AERONAUTICS AND AERODYNAMICS	
Aerodynamics	Aerodynamic stability, flight mechanics, aerothermodynamics, gasdynamics, flight performance; structural materials studies--load bearing materials for wide applications to aerodynamic aircraft and missiles.
Aeronautics	Flight control; vehicle dynamics; vehicle subsystems; flight mechanics; structures; prototype.
Aircraft	Flight control; flight vehicle prototypes, vertical/short take-off and landing (V/STOL), remotely piloted vehicles; structures--flight loads, atmospheric turbulence, analysis methods, flight load sensors; flight mechanics.
Parachutes and Decelerators	Reentry systems.
Avionics	Solid state electronic device and integrated circuit technology; electro-optic device to provide the basic electronic elements.
Test Facilities and Equipment	Structures Test Facility; Fifty Megawatt Facility; Sonic Fatigue Facility; Landing Gear Test Facility.
MATHEMATICAL SCIENCES	
Mathematical Logic	General competence.
Operations Research	All-weather landing systems, air cushion landing gear systems, cryogenic coolers, and inlet/nozzle/flight vehicle integration, and flight control system simulation.
Statistical Analysis	Concepts, data design criteria, and prediction and analysis techniques.

APPLICATION AREA	EXPERTISE
General	Stability and control design handbooks, computer-based design techniques, matrix structural analysis techniques, flutter prediction techniques.
PHYSICS	
Structural Mechanics	Dynamics and statics of solid bodies; kinetics, kinematics, shock and vibration, stress analysis.

CONTACT: Mr. Rudy Beavin
U.S. Air Force Wright Aeronautical Laboratory
Wright Patterson AFB, Ohio 45433
Telephone: (513) 255-2803
Autovon: 785-2803

APPLICATION AREA	EXPERTISE
Radio Frequency Waves (Contd)	on RFR permissible exposure levels and/or operational systems safety criteria.

CONTACT: Major Joseph C. Crigler
Air Force Aerospace
Medical Division
AMD/RDX
Brooks AFB, TX 78235
Telephone: (512) 536-3406
Autovon: 240-3406

APPLICATION AREA	EXPERTISE
PHOTOGRAPHY AND RECORDING DEVICES	
Holography	Laser holography for NDT.
PHYSICS	
Optics and Lasers	Laser effects on materials.
Solid State Physics	Basic research.
Structural Mechanics	Mechanics of materials.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Energy	Review of heat losses.

CONTACT: R. L. Farrow, Chief
Technology Transfer Division
ATTN: Code DRXMR-PT
Army Materials And Mechanics
Research Center
Watertown, Massachusetts 02172
Telephone: (617) 923-3521
Autovon: 955-3521

APPLICATION AREA	EXPERTISE
NUCLEAR SCIENCE AND TECHNOLOGY	
Nuclear Explosions and Devices	Study the damage effects of nuclear explosions operation underwater and above and below ground.
	Design hardened air entrainment systems.
	Development of blast closure valves.
	Development of air blast wave attenuators.
	Study alternate power systems for hardened structures.
	Design environmental control systems for hardened structures.
OCEAN TECHNOLOGY AND ENGINEERING	
Physical and Chemical Oceanography	Oil spills.
Marine Geophysics and Geology	Use of acoustics to determine geological and geotechnical aspects of seafloor.
Oceanographic Vessels, Instruments, and Platforms	Current measurement systems. Buoyancy Transport Vehicle that performs functions of a seagoing forklift.
	Construction Assistance Vehicle--a diver-operated pickup truck.
Underwater Construction and Habitats	Concrete habitats, acrylic plastic habitats, moorings, cable arrays, load handling systems, diver tools, anchors, underwater mateable electrical connectors, power transmission, distribution and control systems, seafloor excavation and trenching, ocean cable protection.

APPLICATION AREA	EXPERTISE
Underwater Construction and Habitats (contd)	Design, analysis, construction, and emplantment of structures on, in, or suspended from the sea-floor, e.g., moorings, cable arrays, breakwaters, concrete structures. Acrylic plastic and concrete for use in the ocean. Propellant driven anchors; pontoon lift systems for salvage work; diver heating systems; and undersea diver tools. Geotechnical investigations. Determination of sea-floor and terrestrial geotechnical properties. Sea-floor penetration and breakout. Anchor holding capacity. Sea-floor foundation design.
ORDNANCE	
Detonation, Explosion Effects and Ballistics	Test and evaluation. Dynamic strutural response due to impact loading from blast.
PHYSICS	
Structural Mechanics	Dynamics and statics of solid bodies, kinetics, shock and vibration, stress analysis (experimental and theoretical).

CONTACT: C. E. Parker
Code L03C
Civil Engineering Laboratory
Port Hueneme, California 93043
Telephone: (805) 982-4070
Autovon: 360-4070

CGRDC
(Northeast Region)

COAST GUARD RESEARCH AND DEVELOPMENT CENTER
Avery Point, Groton, Connecticut 06340

APPLICATION AREA	EXPERTISE
CHEMISTRY	
Analytical Chemistry	
ENERGY	
Solar Energy	
ENVIRONMENTAL POLLUTION TECHNOLOGY	
Marine Pollution Technology	Oil identification. Hazardous substance identification and quantification. Oil pollution trajectory forecasting. Oil pollution trajectory hindcasting. Spill prevention equipment (damage control). Spill containment devices. Hazardous chemical damage control and containment.
NAVIGATION, GUIDANCE AND CONTROL	
Marine Navigation Technology	Aids to navigation. Solar power. Precision electronic navigation systems.
OCEAN TECHNOLOGY AND ENGINEERING	
Domestic and Polar Ice Technology	Ice theory as it applies to characterization of ice occurring in navigable waters. Field testing supporting polar and domestic icebreakers. Iceberg technology including size, distribution and deterioration. Physical oceanography relating to drift characteristics of ice. Ice physics. Cold region equipment.
Marine Fire and Safety Research	Full scale ship fire testing. Boating safety. Examination of technology of equipment, application and physical/chemical processes of fires and fire

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APPLICATION AREA	EXPERTISE
	fighting. System safety analysis as it applies to marine fire and recreational boating (RB) processes. Theoretical naval architecture, addressing RB problems. Automated data collection/processing and associated instrumentation.
Search and Rescue Technology . .	Search and rescue equipment development. Rescue equipment technology, rescue techniques and search effectiveness. Application of operations research and modeling techniques for improved planning and resource allocation.
TRANSPORTATION	
Marine Traffic Management. . . .	Vessel traffic management software. Microprocessor development. Computer assisted radar vessel tracking. Modularized computer display and processing techniques. Vessel traffic data acquisition system.

CONTACT: Michael D'Angelo
Asst. Director for Adm. and Services
Coast Guard Research and Development
Center
Avery Point, Groton, CT 06340
Telephone: (203) 445-8501

CHEMICAL SYSTEMS LABORATORY
Aberdeen Proving Ground, Maryland 21010

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transition	Experience in administration of multidisciplinary basic and applied research programs and engineering programs.
AERONAUTICS AND AERODYNAMICS	
Aeroballistics	Liquid filled projectiles.
ATMOSPHERIC SCIENCE	
Monitoring	Instrumentation for monitoring atmospheric pollutants. Plant monitors, field monitors (automatic/portable). Devices to detect subhazardous concentrations of toxic materials in air, water, or on surfaces.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Life Support Systems	Individual and collective protection against chemical and biological aerosols.
CHEMISTRY	
Analytical Chemistry	Broad capability in detection, identification, and analysis of compounds using a variety of modern techniques including gas chromatography, mass spectrometry (GC and ionic cluster), microanalysis, electron microscopy, atomic absorption, infrared, and Raman (Lasar) analyses.
Basic and Synthetic Chemistry	Synthesis of full range of organic compounds, and reactions of chemical compounds with human chemistry.

APPLICATION AREA	EXPERTISE
Industrial Chemistry and Chemical Process Engineering	Pilot plants and process technology.
Physical and Theoretical Chemistry	Physical property data, reaction kinetics, and thermodynamics.
General	Broad capability in basic and applied research.

COMPUTERS, CONTROL, AND INFORMATION THEORY

Computer Software	Preparation of computer programs to predict aerodynamic stability of liquid filled projectiles. Nationwide use of UNIVAC 1108.
Pattern Recognition and Image Processing	Use of chemometrics in reduction of chemical data and correlation of chemical structures to pharmacological activity. Use of pattern recognition techniques to predict recovery or non-recovery of shock-trauma patients.

DETECTION AND COUNTERMEASURES

Electromagnetic and Acoustic Countermeasures	Smokes and aerosols.

ENVIRONMENTAL POLLUTION AND CONTROL

Air Pollution and Control	Real time air pollutant monitoring and sampling techniques.
Environmental Impact Statement	Preparation, review, and evaluation.

APPLICATION AREA	EXPERTISE
Pesticides Pollution and Control	Water testing kits, decontamination and destruction.
Solid Wastes Pollution and Control	Decontamination and removal of hazardous materials.
Water Pollution and Control	Manufacturing residues from chemical plants, detection of residual contaminants, and sampling techniques.
General	Broad capability to perform research. Environmental surveys, pollution detection and monitoring, chemical treatment technology.
HEALTH PLANNING	
Health Care Technology	Use of pattern recognition techniques to predict recovery of shock-trauma patients. Use of Computer Man--a computer program for simulating wounding--and Casualty Data Bases to predict medical work loads.
LIBRARY AND INFORMATION SCIENCE	
Information Systems	Retrieval of imformation on toxicological properties of chemical compounds, and chemical properties.
MATERIALS SCIENCES	
General	Basic and applied research capability.
MATHEMATICAL SCIENCES	
Statistical Analysis	Handling of data and design of experiments; univariate and multivariate statistical analysis; designed experiments; feasiblity studies; hazard analysis; model building.

APPLICATION AREA	EXPERTISE
Systems Analysis	Comparative cost effectiveness studies; threat analysis; simulation.
MEDICINE AND BIOLOGY	
Ecology	Effects of pollutants on fauna, flora, etc.
Pharmacology and Pharmacological Chemistry	Treatment of poisoning by anticholinesterase compounds.
Toxicology	Data bank on any known toxic compound.
ORDNANCE	
Ammunition, Explosives and Pyrotechnics	Riot control agents and dispersers. Noise, light, smoke and heat generators; ordnance simulators.
Armor	Lightweight bullet-proof garments.
PHYSICS	
General	Research on aerosols, air filtration, air sampling.

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DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER
Bethesda, Maryland 20084

APPLICATION AREA	EXPERTISE
AERONAUTICS AND AERODYNAMICS	
Aerodynamics	Aerodynamic development and support for following aircraft: Vertical/Short Takeoff and Landing; Circulation Control Rotor; X-Wing; remotely Piloted; and Wing in Ground Effect.
Test Facilities and Equipment	Subsonic and transonic wind tunnels and an anechoic flow facility.
BUILDING AND INDUSTRY TECHNOLOGY	
Structural Analysis	Computer and laboratory facilities for structural analysis of Naval ships.
Construction Materials, Components and Equipment	Materials development research includes new alloys, plastics, elastomers, composites and coating.
COMPUTERS, CONTROL AND INFORMATION THEORY	
Computer Software	Computer services and techniques for management problems, naval design and construction, and many areas of mathematical analysis.
DETECTION AND COUNTERMEASURES	
Acoustic Detection	Acoustic silencing of submarines and surface ships including reduction of sonar self-noise and target strength.
ENERGY	
Electric Power Transmission	Engineering research to improve machinery and propulsion systems, and study of advanced electrical propulsion and power systems.

APPLICATION AREA	EXPERTISE
Engine Studies	Research to improve shipboard machinery and propulsion systems.
Fuels	Research in fuel development.
ENVIRONMENTAL POLLUTION AND CONTROL	
Noise Pollution and Control	Machinery Acoustic Analysis Test Center for noise reduction.
Solid Wastes Pollution and Control	Research concerning abatement of air and water pollution from Navy ships.
Water Pollution and Control	Research concerning abatement of water pollution from Navy ships.
INDUSTRIAL AND MECHANICAL ENGINEERING	
Non-destructive Testing	Non-destructive testing of fabricated structures.
MATERIALS SCIENCES	
Composite Materials	Materials development research including composites.
Iron and Iron Alloys	Materials development research including iron alloys.
Lubricants and Hydraulic Fluids	Materials development research including lubricants.
Materials Degradation and Fouling	Materials development research including fouling problems
Nonferrous Metals and Alloys	Materials development research including nonferrous matals and alloys.

APPLICATION AREA	EXPERTISE
OCEAN TECHNOLOGY AND ENGINEERING	
Marine Engineering	Research and Development Center for Naval Vehicles utilizing towing basins, test tanks, variable pressure water tunnels, circulating water channel, and other unique facilities.
TRANSPORTATION	
Marine and Waterway Transportation	Current concepts under research and development include hydrofoils, surface effect ships, air-cushion vehicles, small waterplane-area-twin-hull Ships and conventional Naval vehicles.

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
Research Triangle Park, North Carolina 27711

APPLICATION AREA	EXPERTISE
ATMOSPHERIC SCIENCES	
Monitoring	Evaluation of monitoring systems for pollutants in air and sources of emissions. Conduct of field studies to characterize the nature and extent of air pollution. Development of quality assurance materials and procedures for air pollution measurement systems.
CHEMISTRY	
Analytical Chemistry	Instrumentation for qualitative and quantitative analysis of organic and inorganic constituents present in trace quantites in air, source samples, fuels, and raw materials. Instrumental techniques, including ICAP-optical emission spectrometry, gas chromatography, ion chromatography, spark source mass spectrometry, X-ray fluorescence, and neutron activation analysis.
ENERGY	
Environmental Studies	Long-term trend air monitoring to determine impact of control technology of power generators on air quality. Aerometric studies to determine effects on health. Short-term monitoring to characterize emissions from specific sources.
Fuels	Analysis of fuels including gasoline, diesel fuel, coal, and oil for trace constituents such as manganese, lead, phosphorus, and sulfur. Determination of physical parameters such as Reid vapor pressure, distillation range, octane number, and cetane number. Serving as the national source for standard reference materials for lead and manganese in gasoline.

APPLICATION AREA	EXPERTISE
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control. . . .	Evaluation and designation of reference methods for determining compliance to emission regulations. Fenceline monitoring to provide information on maximum population exposure for use in developing regulations. posure for use in developing regulations. to air quality standards and assessment of control strategies.
HEALTH PLANNING	
Community and Population Characteristics	Aerometric measurements to assess degree of exposure to air pollutants.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENT	
Environment	Monitoring systems for measuring pollutants in air and source samples; measurements of impact of pollution on air quality and human exposure; quality control systems; and procedures for assuring data quality.

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ENVIRONMENTAL SCIENCES RESEARCH LABORATORY
Research Triangle Park, North Carolina 27711

APPLICATION AREA	EXPERTISE
AERONAUTICS AND AERODYNAMICS	
Aerodynamics	Basic physical modeling of the dispersion of atmospheric pollutants; comparing and evaluating scaling laws and physical modeling techniques for use by other laboratories in the area of air pollution meteorology.
Test Facilities and Equipment	A water channel-towing tank, a meteorological wind tunnel, and an instrumented calibration wind tunnel are basic components. A mini-computer, including an analog-to-digital converter, magnetic disk and tape drives, electrostatic printer-plotter, and CRT display unit, is available for real-time data acquisition and analysis.
ATMOSPHERIC SCIENCES	
Aeronomy	Determining the physical rate constants, chemical reaction mechanism, and pollutant transformations occurring in the stratosphere.
Dynamic Meteorology	Developing and evaluating air quality simulation models that describe the atmospheric link between pollutant emissions and ambient air quality.
Meteorological Data Collection Analysis and Weather Forecasting	Developing and updating air pollution potential climatologies.
Physical Meteorology	Identifying the chemical and physical transformations that emitted pollutants undergo in the atmosphere to form new gaseous or aerosol pollutants; developing models of the mechanisms and kinetics of pollutant transformations and removal processes in the atmosphere.

APPLICATION AREA	EXPERTISE
Weather Modification	Assessing the effects of pollution on weather and climate, with consideration given to long-term trends in air quality.
CHEMISTRY	
Analytical Chemistry	Developing and conducting research in sampling methods, characterization, and measurement of air contaminants, with special emphasis on inorganic and toxic organic air pollutants. Validating laboratory and prototype instrument models and developing suitable calibration techniques for measuring air pollutants. Broad capability in detection, identification and analysis of atmospheric compounds, using a variety of modern techniques (i.e., gas chromatography, mass spectrometry, electron microscopy, atomic absorption, infrared, and Raman (laser) analysis.
Photo and Radiation Chemistry	Developing and applying electro-optical instruments and systems for the identification and measurement of pollutants emitted from stationary and mobile sources.
Physical and Theoretical Chemistry	Developing basic chemical kinetic data for use in mathematical modeling of chemically reactive atmospheric pollutant systems, using smog chambers and field measurement programs. Determining the particulate size, mass, opacity, and chemical composition, as well as the chemical constituents of gaseous effluents, for ambient air pollutant and emissions measurement characterization.

APPLICATION AREA	EXPERTISE
ENERGY	
Environmental Studies.	Conducting laboratory and field studies to determine the origins, transport, transformation, and removal of pollutants released to the atmosphere from fossil fuel-burning energy production facilities. CONTACT: Mr. Rudy Boksleitner Environmental Research Center Regional Services Staff Research Triangle Park, NC 27711 Telephone: (919) 541-2611 Alternate: Mr. Gordon Ortman

FBI LABORATORY
Washington, D.C.

APPLICATION AREA	EXPERTISE
CHEMISTRY	
Analytical Chemistry	Chemical examinations of materials of evidentiary nature in criminal matters.
MATERIALS SCIENCES	
Fibers and Textiles	Microscopic comparisons/examinations of hairs/fibers/fabrics of evidentiary nature in criminal matters.
General	Examinations/comparisons of general categories of materials of evidentiary nature in criminal matters such as soils, glass, metals, drugs, plastics, petroleum products, chemicals, dyes/inks, gun powder residues, bombs, blood/tissue, hairs, fibers, fabrics, toolmarks, tools, guns, ammunition, explosives, poisons, fuels, typewriting, handwriting, photographs, plaster casts.
MEDICINE AND BIOLOGY	
Immunology	Determination of origin of body fluids.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Police	Forensic science research and development.
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Law Enforcement	Specialized instruction/courses in forensic science for local law enforcement crime laboratory scientists.

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FSED
(Mid-Atlantic Region)

USDA - FOREST SERVICE
Equipment Development Activity
Washington, D.C. 20013

APPLICATION AREA	EXPERTISE
AGRICULTURE AND FOOD	
Agricultural Equipment Facilities & Operations	Forestry applications of plows, drills, planters, sprayers.
CIVIL ENGINEERING	
Highway Engineering	New techniques in construction and maintenance of low-volume roads, bridges.
Civil Engineering	Low-volume road design, forest environment flood control, watershed control, sanitary engineering, dams.
Soil and Rock Mechanics	Highway construction materials, soils, soil disturbance, avalanches, landslides.
ENERGY	
Energy Sources	Wood, alternate sources in remote areas.
Energy Use, Supply and Demand	Conservation, alternative sources, remote areas.
Fuel Conversion Processes	Wood-pyrolitic conversion to oil, gas, char; wood for heat.
GOVERNMENT INVENTIONS FOR LICENSING	
Mechanical Devices and Equipment	Special equipment for forestry applications, nurseries, harvesting, rangelands, fire, planters, plows, drills, etc.
NATURAL RESOURCES	
Natural Resource Management	Special equipment and techniques in wildland fire prevention and operations.

APPLICATION AREA	EXPERTISE
Forestry	Equipment applications in timber management; recreation; rangeland improvements; reclamation; road and trail construction and maintenance; pesticide application.
Soil Sciences	Equipment applications and techniques in land reclamation.
Cartography	Development of new techniques in map making, photogrammetry; computerized applications.
Natural Resource Surveys	All applications of remote sensing in forestry and resource management.

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FSR
(Mid-Atlantic Region)

FOREST SERVICES RESEARCH LABORATORIES
U.S. Department of Agriculture
Washington, D.C. 20013

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transfer	Technology transfer program.
ENERGY	
Energy Use, Supply and Demand	Studies concerning use of wood.
ENVIRONMENTAL POLLUTION AND CONTROL	
Solid Wastes Pollution and Control	Techniques on recycling of waste wood products.
HEALTH PLANNING	
Environmental and Occupational Factors	Studies on value of trees to the environment.
MATERIALS SCIENCES	
Materials Degradation and Fouling	Information on wood deterioration, decay; prevention and control work.
MEDICINE AND BIOLOGY	
Botany	Information on tree anatomy, physiology, and pathology.
Ecology	Information on trees in regard to their environment.
NATURAL RESOURCES AND EARTH SCIENCES	
Mineral Industries	Information on the reclamation of strip-mined areas.

APPLICATION AREA	EXPERTISE
Natural Resource Management	Information on the conservation and management of forested lands, grasslands, wildlife, water, and fire.
Natural Resource Surveys	Ongoing surveys of timberland.
Forestry	Information on all aspects of forestry.
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Environmental Management and Planning	Information on how vegetation can be utilized in improvement of urban environments.
Housing	Information on proper insulation and also on housing renovations.

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APPLICATION AREA	EXPERTISE
Personnel Detection	Acoustic and radar intrusion detectors, to prevent surreptitious entry.
General	Acoustic and radar intrusion detectors, to prevent surreptitious entry.
ELECTROTECHNOLOGY	
Antennas	VHF, UHF, and microwave antenna design; small and low weight antenna systems, conformal antennas, stripline antenna.
Circuits	RF, AF, and digital microelectronics especially for severe environments and high *g* conditions.
Optoelectronics Devices and Systems	Surface acoustic wave devices, IR laser sources, modulators and measuring instruments, fiberoptic telemetry.
Power and Signal Transmission Devices	Miniature microwave power sources.
Resistive, Capacitive and Inductive Components	Thin and thick film technology.
Semiconductor Devices	IC design, PIN diodes, microwave power sources.
General	Wide expertise in microwave radar systems, digital signal processing and telemetry.
ENERGY	
Energy Conversion Storage	Special long shelf life, reserve instrument batteries; hand-cranked generators for emergency power.
Energy Use, Supply and Demand	Fluidic process temperature controllers to prevent over heating in high temperature processes.

APPLICATION AREA	EXPERTISE
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	Fluidic pollutant gas concentration sensors.
GOVERNMENT INVENTIONS FOR LICENSING	
Electrotechnology	Electro-optical devices, ferroelectric devices.
Mechanical Devices and Equipment	Fluidic components, sensors, and systems.
Instruments	Fluidic gas concentration sensors.
HEALTH PLANNING	
Health Care Technology	Federal Laboratory Consortium contract for biomedical technology.
INDUSTRIAL AND MECHANICAL ENGINEERING	
Manufacturing Processes	Fabrication and packaging of rugged electronics.
Hydraulic and Pneumatic Equipment	Fluidic or flueric sensors and controls of all types.
LIBRARY AND INFORMATION SCIENCE	
Information Systems	Computerized information systems with on-line access to National Technical Information Service, Defense Documentation Center, and the Smithsonian Science Information Exchange.
MATERIALS SCIENCES	
Adhesives and Sealants	Potting materials for rugged electronics.

APPLICATION AREA	EXPERTISE
Plastics	Potting material, adhesives, dielectric materials.
MATHEMATICAL SCIENCES	
Operations Research	Statistics, system modeling, cost-effectivness analysis, system optimization, dynamic programming (especially geometric programming).
NUCLEAR SCIENCE AND TECHNOLOGY	
Nuclear Explosion and Radiation Effects	Mechanisms of radiation damage to electronics materials; design and operation of nuclear radiation simulators; electromagnetic pulse protection.
Nuclear Instrumentation	Neutron and X-ray spectroscopy, ionizing radiation dosimetry.
PHYSICS	
Fluid Mechanics	Theoretical analysis of confined flowfields, computer solutions of the Navier-Strokes equation, flow visualization.
Optics and Lasers	Coherent optical sources, near millimeter adherent sources, open resonator cavities, heterodyne systems.
Solid State Physics	Theoretical and experimental expertise in the dynamics of charge carriers in amorphous insulators, electron spin resonance, Hall effect, nonlinear electron transport, acousto-optic effects, ferroelectric, LSI capabilities.
Plasma Physics	Theoretical calculations of the dynamic response of plasmas, experimental expertise on MEV and positive ion beams, diagnostic measurements with X-ray bend crystal spectrometers.

APPLICATION AREA	EXPERTISE
Radio Frequency Waves	Interactions of electromagnetic waves with matter.
General	Quantum theory, quantum electrodynamics.
TRANSPORTATION	
Air Transportation	Crash recorders and crash research telemetry systems, clear air turbulence detection, jet engine control components.
Pipeling Transportation	Flow measurements.
Road Transportation	Crash recorders and crash research telemetry systems, anti-skid brake system, adaptive shock absorbers.

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HEALTH EFFECTS RESEARCH LABORATORY
Research Triangle Park, North Carolina 27711

APPLICATION AREA	EXPERTISE
ADMINSTRATION	
Research Program Administration and Technology Transfer	Research and development management, planning, and forecasting; contract management; in-house laboratories; consultation. Program planning, development, execution and management; contract management.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Biomedical Instrumentation and Bioengineering	Non-invasive techniques and instrumentation for measuring human function under stress with environmental exposure.
Tissue Preservation and Storage	In collaboration with NBS and Federal Republic of Germany, studies to develop a tissue bank.
CHEMISTRY	
Analytical Chemistry	Modern analytical instrumentation. Trace quantity analysis. Capacity for large number of samples. Emphasis on pesticides. Broad capability in detection, identification, and analysis of compounds using a variety of modern techniques including gas chromatography, mass spectrometry, microanalysis, electron microscopy, and atomic absorption.

APPLICATION AREA	EXPERTISE
ENERGY	
Environmental Studies	Environmental aspects of power generation; impacts of shale technologies; effects of pollutants on physiological function.
ENVIRONMENTAL POLLUTION AND CONTROL	
Environmental Health and Safety	See Medicine and Biology.
MEDICINE AND BIOLOGY	
Biochemistry	Biological systems chemistry, assay, and analysis. Effects from environmental pollutants.
Clinical Chemistry	Effects of pollutants on human volunteers.
Clinical Medicine	Low levels of environmental pollutants on physiological functions in humans. Non-invasive techniques and stress employed.
Cytology, Genetics and Molecular Biology	Bioassay systems; cytological alteration from energy production. Mutagenic and oncogenic studies.
Electrophysiology	Neurophysiologic studies of environmental pollutants.
Immunology	Experimental studies in animals and humans.
Psychophysiology	Broad program in neurotoxicology of environmental toxicants; includes neurochemistry, neuropathology, neurophysiology, and behavioral toxicology.
Physiology	Emphasis on pulmonary physiology in both humans and laboratory animals.

APPLICATION AREA	EXPERTISE
Radiobiology	Effects of electromagnetic (particularly non-ionizing) radiation on biological systems.
Toxicology	Studies of inhaled gases and particulates in animal systems.
NUCLEAR SCIENCE AND TECHNOLOGY	
Radioactive Wastes and Radioactivity	Studies on effects of Krypton^{85}.

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HRL
(Mid-Continent Region)

AIR FORCE HUMAN RESOURCES LABORATORY
Brooks AFB, Texas

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Management Practice.	Management and organizational behavior.
Research Program Administration and Technology Transfer. . . .	Research and development product utilization, technology transfer, contract management.
BEHAVIOR AND SOCIETY	
Job Training and Career Development.	Flying and technical training, job requirements, job classification, career progression, on-the-job training, and performance measurement (job evaluation).
Personnel Selection and Classification	Person-job matching, test development.
Psychology	Educational and industrial psychology, psychometrics, operations and cost analyses.
Social Concerns.	Wide-spectrum utilization of women throughout USAF job specialities.
General.	Man-vehicle interface, especially in flight simulation and maintenance simulation.

APPLICATION AREA	EXPERTISE
COMPUTERS, CONTROL AND INFORMATION THEORY	
Computer Software.	Modeling of manpower personnel system, occupational and assignment analyses, and development of computational algorithms for the behavioral sciences.

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IERLR
(Southeast Region)

INDUSTRIAL ENVIRONMENTAL RESEARCH LABORATORY
Research Triangle Park, North Carolina 27711

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transfer	R&D planning and management, primarily contract management.
	Technology transfer through exhibition booth, symposia, research reports, PR documents, and packaging of R&D information.
ENERGY	
Environmental Studies	Environmental assessment and pollution controllability of conventional combustion and emerging energy systems.
	Sampling and analysis methodology for potentially toxic nonregulated pollutants.
Electric Power Production	R&D on the management of power plant waste and water.
	R&D on cooling and waste heat utilization.
	Low nitrogen oxide burner design; combustion modification research.
	R&D on regenerable flue gas desulfurization.
	R&D on nonregenerable flue gas desulfurization.
Fuel Conversion Processes	Chemically active fluid bed (CAFB) R&D.
	Environmental assessment studies of synthetic fuels production processes.

APPLICATION AREA	EXPERTISE
Fuels	R&D and environmental assessments of coal cleaning plants. Studies of cleaned coal applicability. Environmental assessment and control R&D for refineries and petroleum distribution systems.
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	Environmental assessments and control technology R&D for stationary sources. Sources covered include combustion; synthetic fuels production; petrochemicals, textiles, refineries; iron and steel industry.
Solid Wastes Pollution and Control	Environmental assessment for multimedia pollution from stationary sources. Sources covered include: combustion; synthetic fuels production; petrochemicals, textiles, refineries; iron and steel industry. R&D for disposal/utilization of wastes from combustion: refineries, iron and steel, and various pollution control devices/processes.
Water Pollution and Control	Environmental assessments for multimedia pollution from stationary sources. Sources covered include: Combustion; synthetic fuel production; petrochemicals, textiles, refineries; iron and steel industry. R&D for pollution control from various stationary sources in the iron and steel industry; textiles, agrichemicals, petrochemicals. Research on treatability of wastewaters.

APPLICATION AREA	EXPERTISE
LIBRARY AND INFORMATION SCIENCE	
Information Systems	Retrieval of information and data on pollution control equipment, reliability, efficiency. Data on pollution sources, including emissions, effluents and controllability.
	Management of extramural R&D program using automatic data processing.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Environment	Information on pollution control technology for stationary sources: applicability, reliability, efficiency.

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APPLICATION AREA	EXPERTISE
Optics and Lasers	Laser and holography techniques; nuclear-pumped laser technology; remote sensing.
Solid State Physics	Material properties and processing of advanced solid state electronic devices and sensors.
Structural Mechanics	Mechanisms of degradation and failure in structural materials; fracture mechanics.
Plasma Physics	Experimental studies of flow field chemical kinetics using shock tubes, expansion tubes, etc.
Radio Frequency Waves	Research on techniques for radiation, propagation or scattering of electromagnetic energy related to communications, radiometric applications -- VLF through millimeter wave frequencies.

PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS

Energy	Energy audits; solar heating applications; infrared thermography.
Environment	Atmospheric pollution measurements; water quality measurements.

TRANSPORTATION

Air Transportation	Requirements for future aeronautical systems; conceptual designs; market demands; economic returns; technology impact; flight research.
Transportation Safety	Aircraft airworthiness; develop airworthiness criteria; tests and simulator investigations; operating procedures.
Global Navigation Systems	Advanced technology planning for large area space systems.

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APPLICATION AREA	EXPERTISE
Radiation Pollution and Control	Monitoring of gamma and X-rays, charged particles, neutrons; biological and environmental effects. Waste storage in granite; instrumentation.
Environmental Health and Safety	Effects of pollutants from power production on health; heavy metals effect on health; indoor air pollution; effects of radionuclides, ionizing radiation, magnetic and electric fields on health; population at risk to air pollution.
General	Survey of instruments for environmental monitoring.

GOVERNMENT INVENTIONS FOR LICENSING

Chemistry	Bioconversion, stack gas cleanup.
Nuclear Technology	Ion sources.
Biology and Medicine	Radiation cameras; radioactive tracer.
Metallurgy	New steel alloys and treatment; superconductors.
Instruments	Trace heavy metal detector.

HEALTH PLANNING

Community and Population Characteristics	Demographic information; epidemiology.
Environmental and Occupational Factors	Effects of energy production on health.
Health Care Technology	Development of an automated lipoprotein analyzer; radiation cameras and tomographic scanners; nuclear medicine, heavy ion radiation therapy.

APPLICATION AREA	EXPERTISE
INDUSTRIAL AND MECHANICAL ENGINEERING	
Environmental Engineering	Energy conserving lighting; passive light controls; solar air conditioning.
Manufacturing Processes and Materials Handling	Powder metallurgy.
LIBRARY AND INFORMATION SERVICES	
Information Systems	Networks; management information systems; data base management; indexing; automatic indexing; computerized literature searching; current awareness information retrieval.
Reference Materials	Thesauri; thesaurus software.
MATERIALS SCIENCES	
Carbon and Graphite	Glassy carbon; study of graphite surface chemistry in combustion.
Ceramics, Refraction and Glass	Ceramic alloy research; microstructure relationship to properties; ferrites.
Corrosion and Corrosion Inhibition	Erosion-corrosion resistant alloys in coal combustion systems; erosion-corrosion test facility.
Iron and Iron Alloys	New high strength steels and heat treatment; steels for use at cryogenic temperatures; basic studies in powder metallurgy; nickel free cryogenic steels; study of fundamentals of alloy design, phase studies.
Nonferrous Metals and Alloys	New magnetostrictive material; sintered printed circuit conductors; Nitinol research and applications.

APPLICATION AREA	EXPERTISE
Plasma Physics	Research and development fusion energy.
General	Nuclear physics using high energy charged particle accelerators.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENT	
Energy	Conservation, geothermal, solar; regional energy studies.
Environment	Compilation of descriptions of various commercial environmental monitoring instruments and data on various monitoring considerations; studies on effects of various pollutants.
General	Census data available; computer production of demographic maps.
TRANSPORTATION	
Metropolitan Rail Transportation	Investigation of control and safety related equipment for rail rapid transit systems.
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Economic Studies	Various studies for California and Rocky Mountain region related to employment and economic impacts of various energy scenarios.

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APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transfer	Management of R&D, small projects to large complex systems. Comprehensive technology transfer program.
AERONAUTICS AND AERODYNAMICS	
Aerodynamics	Aerodynamic behavior of bodies in large wind tunnels and in zero gravity.
Test Facilities and Equipment	Design and operation of vacuum, cryogenic, materials, engine, and power test facilities. Large wind tunnels and zero gravity facilities. Data collection systems.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Prosthetics and Mechanical Organs	Advanced materials for prosthetic applications. Surface treatment of prosthetics materials with ion beams to promote tissue and bone adherence.
BUSINESS AND ECONOMICS	
Minority Enterprises	Scientific and technical careers. Minority R&D enterprises.
CHEMISTRY	
Analytical Chemistry	Instrumental analysis including mass spectroscopy, optical and x-ray emission spectroscopy, x-ray diffraction, atomic absorption, spectrophotometry, and gas, ion, and liquid chromotography. Metallographic analysis (wet chemistry).

APPLICATION AREA	EXPERTISE
Basic and Synthetic Chemistry	Synthesis, properties, and reactions of inorganic and organic compounds.
Industrial Chemistry and Chemical Process Engineering	Transportation, handling, and storage of cryogenic fluids.
Photo and Radiation Chemistry	Studies involving the interrelationships of electromagnetic or particle radiation and chemical reactions. Studies of radioactive elements and their reactions such as radio pharmaceuticals. Photovoltaic devices (solar cells).
Physical and Theoretical Chemistry	Physical aspects and interpretation of chemical systems; reaction kinetics, chemical equilibria, chemical thermodynamics, thermochemistry, etc. Electrochemistry. Phase studies of metallic systems. Membranes. Surface chemistry.
Polymer Chemistry	Theory and chemistry of polymerization, curing, crosslinking, etc. Synthesis, properties, and reactions.
COMMUNICATION	
Common Carrier and Satellite	High power, high frequency amplifiers for communications satellites. Advanced satellite communications systems.
COMPUTERS, CONTROL AND INFORMATION THEORY	
Control Systems and Control Theory	Open and closed loop control systems.
Information Processing Standards	Data acquisition and reduction for test installations.

APPLICATION AREA	EXPERTISE
ELECTROTECHNOLOGY	
Antennas	Antenna theory and design, wide-band and narrow-band, for satellite and spacecraft communications systems.
Circuits	Circuit theory, filters, amplifiers, power conditioning and supply circuits, signal conditioning circuits, commutators, logic circuits, switching circuits, phase locked loop circuits.
Electromechanical Devices	Relays, switches.
Electron Tubes	Traveling wave tubes, Klystron tubes, thyristor tubes.
Power and Signal Transmission Devices	Satellite and spacecraft communications terminals, wideband parametric amplifiers, analog and digital transmission devices, lasers, data relay systems.
Resistive, Capacitive and Inductive Components	Capacitors, electromagnets.
Semiconductor devices	Transistors, semiconductor diodes.
ENERGY	
Batteries and Components	High energy-density battery research, nickel-zinc and silver-zinc batteries, for space and terrestrial applications.
Electric Power Production	Gas turbines, topping cycles, magneto-hydrodynamic generation, combustion processes, solar photovoltaic, large wind power systems.
Energy Sources	Solar (photovoltaic), wind (large systems).

APPLICATION AREA	EXPERTISE
Miscellaneous Energy Conversion and Storage	Gas turbine and compressors, topping cycles, Rankine, Brayton, and Stirling cycle engine systems, magnetohydrodynamic generation; solar photovoltaic; large wind power systems; high energy density batteries; fuel cells; reduction-oxidation (redox) storage systems.
Fuel Conversion Process	Basic studies on heat transfer theory, principles and mechanisms. Advanced coal-fueled systems studies, once-through boiling, heat pipes, combustion process.
Polymer Chemistry	Theory and chemistry of polymerization, curing, crosslining, etc. Synthesis, properties, and reactions.
General	Basic studies on heat transfer theory, principles, and mechanisms. Once-through boiling. Transpiration cooling. Magnetic heat pumping.
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	Airborne air quality and atmospheric condition monitoring systems. Some development and demonstration of advanced ground-based air quality monitoring techniques.
Noise Pollution and Control	Research on propagation and reduction of aircraft engine noise.
Radiation Pollution and Control	Radioactive contamination assessment and control.
Environmental Health and Safety	Environmental contamination assessment and control.

APPLICATION AREA	EXPERTISE
GOVERNMENT INVENTIONS FOR LICENSING	
General	Various, particuarly as related to aircraft and spacecraft propulsion and electric power, satellite communications, and materials.
INDUSTRIAL AND MECHANICAL ENGINEERING	
Quality Control and Reliability	Standards, plans, and techniques for insuring high quality and reliability. Failure analysis and information feedback.
Tooling, Machinery and Tools	Gas turbines, compressors, pumps, gears, bearings, seals, pressure vessels, advanced materials. Lubrication, friction, and wear.
Manufacturing Processes and Materials Handling	Advanced materials application and fabrication. Handling and storage of cryogenic fluids, hydrogen, fuel and oxidizers. Sputtering and ion plating.
Nondestructive Testing	Ultrasonic, radiographic, and other means for nondestructive evaluation. Electronic and optical systems for internal inspection of operating machinery.
MATERIALS SCIENCES	
Ceramics, Refractories and Glass	Basic studies of ceramic materials for very high temperature applications.
Composite Materials	Comprehensive research and development on essentially all classes of composite materials, their properties, characteristics, and applications.

APPLICATION AREA	EXPERTISE
Corrosion and Corrosion Inhibition	Research on high temperature environment corrosion and corrosion inhibiting coatings, high temperature oxidation and oxidation resistant coatings.
Iron and Iron Alloys	Basic studies of physical properties to extend uses at cryogenic temperature.
Lubricants and Hydraulic Fluids	Research and development of advanced lubricants and hydraulic fluids for severe operating conditions and long life.
Nondestructive Testing	
Nonferrous Metals and Alloys	Research and development for high temperature and gas turbine applications. Superalloys. Dispersion strengthened materials. Eutectics.
Plastics	(see Polymer Chemistry)
Refractory Metals and Alloys	Research on microstructure, physical and mechanical properties, alloying for high temperature use. Improvement in fabrication properties and processes.

MEDICINE AND BIOLOGY

Radiobiology	Preparation of experimental radioactive isotopes for diagnosis and treatment of diseases for U.S. Public Health Service.

NATURAL RESOURCES

Natural Resource Surveys	Airborne multispectral scanning to determine earth surface conditions.

APPLICATION AREA	EXPERTISE
Snow, Ice, and Permafrost	Aircraft and satellite-borne sensor systems to determine the thickness and kinds of ice covering large bodies of water.
PHOTOGRAPHY AND RECORDING DEVICES	
Photographic Techniques and Equipment	Development of high-speed motion picture systems and other techniques for photographing research work.
PHYSICS	
Acoustics	Research on the nature, properties, propagation, and supression of sound in ducts. Applications to aircraft engines.
Fluid Mechanics	Research and applications of fluid properties, and static and dynamic behavior; and of interactions between fluids and solid bodies.
Optics and Lasers	Development of optical devices for instrumentation and data taking purposes.
Solid State Physics	Research on physical properties of materials particularly as related to magnetism and superconductivity. Semiconductor studies particularly as related to photovoltaic devices.
Structural Mechanics	Stress analysis, shock and vibration research, particularly as related to properties of advanced materials and rotating machinery. Fracture mechanics. Fatigue failure mechanisms.
Plasma Physics	High temperature plasma research for advanced power and propulsion systems.

APPLICATION AREA	EXPERTISE
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Energy	Alternative energy conversion processes: stand-alone solar photovoltaic systems, large central wind power systems, cogeneration, advanced coal-burning systems, energy storage systems, airborne thermal imaging for heat loss.
Environment	Techniques for identifying airborne contaminants and locating their sources.
TRANSPORTATION	
Surface Transportation	Electric vehicle studies and power plant development. Automotive gas turbine and Stirling-cycle engines. Technology for increasing fuel efficency and reducing exhaust emissions.

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APPLICATION AREA	EXPERTISE
INDUSTRIAL AND MECHANICAL ENGINEERING	Metric conversion planning, precision machining and polishing; non-destructive testing of microtargets for laser fusion; acoustic emission for nondestructive testing applications.
LIBRARY AND INFORMATION SERVICES	Novel techniques for information storage and rapid retrieval systems; master control computer program; on-line literature searching; computer program for integrating tests and data.
MATERIALS SCIENCES	Development of metals and alloys having special properties; fabrication of specialized ceramic components; synthesis, formulation and characterization of polymers and fiber composites; synthesis, formulation, processing, machining; processing and fabrication of beryllium glasses; storage behavior of hydrogen and its isotopes under extremes of pressure and temperature and solid state chemistry; new materials and fabrication processed by vapor deposition techniques; coatings, structures and electronic devices by thin-film technology; electroplating and electroforming of shapes and materials; crystal growth of large silicon and germanium crystals; joining technology; physical and mechanical testing at the extremes of temperature and pressure; surface microstructure analysis; equation-of-state studies; radiation effects on structural materials; fabrication of amorphous alloy glass components.
MATHEMATICAL SCIENCES	Sensitivity analysis of ordinary differential equation systems subroutines to evaluate mathematical functions; applied and computational mathematics; computer algorithms for transposing large matrices.

APPLICATION AREA	EXPERTISE
MEDICINE AND BIOLOGY	Screening of chemotherapeutic agents using pattern recognition techniques; biological effects of nuclear explosions.
NATURAL RESOURCES AND EARTH SCIENCES	Seismic analysis of resistant structures and power reactors; seismic detection and instrumentation; in situ coal gasification; shale oil retorting.
NUCLEAR SCIENCE AND TECHNOLOGY	Energy level computations and measurements; nuclear electric moments; gigajoule laser technology; management of nuclear wastes.
PHOTOGRAPHY	Optics of ultra-high-speed photography; picosecond photography of laser produced plasmas; ultrafast optical/X-ray framing camera; high voltage photography, industrial photography.
PHYSICS	Computations; geophysical investigations of terrestrial material properties; geophysical instrumentation and measurements.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	Fire-arson and disaster control planning; fire hydraulic; residential and industrial fire protection studies; fire protection equipment development - streams, nozzles, hydrants, hydraulic hardware; State and local government assistance in energy planning and analysis; technology transfer to State and local governments; transportation modeling of street and highway systems.

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USDA - FOREST SERVICE
Equipment Development Center
Missoula, MT 59801

APPLICATION AREA	EXPERTISE
AERONAUTICS AND AERODYNAMICS	
Parachutes & Decelerators	Smoke-jumpers parachutes, smokejumper clothing and equipment, paracargo equipment and techniques.
AGRICULTURE AND FOOD	
Agricultural Equipment, Facilities, and Operations	Plows, drills, spreaders
BIOMEDICAL TECHNOLOGY AND ENGINEERING	
Human Factors Engineering	Hand tools, firefighters protective clothing, stresses in forest workers and fire fighters.
ENVIRONMENTAL POLLUTION AND CONTROL	
Pesticides Pollution and Control	Pesticide application and deposit assessment in forest environment.
GOVERNMENT INVENTIONS FOR LICENSING	
Mechanical Devices and Equipment	Electronic counters, special forestry equipment, nursery equipment.
MATERIALS SCIENCES	
Fibers and Textiles	Firefighters protective clothing, chainsaw chaps.

APPLICATION AREA	EXPERTISE
MEDICINE AND BIOLOGY	
Pest Control	Aerial application equipment for forest environments, spray assessment, aircraft spray characterization.
NATURAL RESOURCES	
Forestry	Greenhouse and nursery equipment, fire equipment, small cable harvesting systems, trail construction and maintenance equipment, site preparation, cone and seed harvesting, watershed instrumentation, safety equipment and procedures.
Natural Resource Management	Fire equipment - hand tools, protective clothing, personal gear, food.
Soil Sciences	Land reclamation equipment - plows, drills, planters.
TRANSPORTATION	
Transportation Safety	Sign materials, construction, maintenance

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APPLICATION AREA	EXPERTISE
Photographic Techniques and Equipment	Development test and evaluation of airborne camera systems including long focal length optics, auto and range focusing systems, data annotation systems, panoramic and line scan system. Development of automated camera test equipment. Evaluation of silver halide and unconventional photographic technology.
Recording Devices	Development of acoustic and video recording devices. Aerial photography. Development of laser records.
General	Photo image enhancement techniques.
PHYSICS	
Acoustics	Design and development of underwater acoustic systems. Ocean parameters as applied to acoustic sensors.
Fluid Mechanics	Three-dimensioned, compressible, unsteady aerodynamics for Structural Airloads and Flutter analysis - Potential flow, Mach Box, Doublet Latter and Piston Theory. As applied to proper operation of systems being developed. Aircraft fluidic components and systems.
Optics and Lasers	Ring Laser Gyro Development. Development of metal vapor lasers.
Structural Mechanics	A/C Stress Analysis, Finite Element Methods, Nastran/Stags, Dynamic, Aero-Thermo-Servo-Plastic Analysis, Viscoelasticity, Vibration, Impact and Shock wave analysis. Buckling, fatigue and fracture mechanics.
Plasma Physics	Nuclear Magnetic Resonance Gyro Development.

APPLICATION AREA	EXPERTISE
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Human Resources.	Application of human factors training research and techniques to improve personnel training, assessment of training effectiveness.
TRANSPORTATION	
Global Navigation Systems. . . .	Design and Development of all systems.

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APPLICATION AREA	EXPERTISE
NONDESTRUCTIVE TESTING	
Ultrasonic Testing	Subsurface flaw detection, thickness measurement and the characterization of metallurgical or material properties of structures or materials by interrogation with energy in the form of sound waves.
Radiographic Testing	The use of radiant energy in the form of neutrons, X-rays or gamma rays for subsurface examination of opaque objects by producing graphical records or sensitized film.
Miscellaneous Testing	Detection of surface or slightly subsurface flaws. Includes liquid penetrant, magnetic-particle, eddycurrent, etc.

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NAVAL COASTAL SYSTEMS LABORATORY

Panama City, Florida · 32401

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Management Information Systems	Local planning and tracking.
Research Program Administration and Technology Transfer	Resource data base development.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Biomedical Instrumentation and Bioengineering	Diver monitoring.
Life Support Systems	Underwater breathing, diver heating.
DETECTION AND COUNTERMEASURES	
Acoustic Detection	Hi-definition saver; mine hunting; underwater small detection.
Electromagnetic & Acoustic Countermeasures	Mine countermeasures; acoustic and torpedo countermeasures.
Magnetic Detection	Cryogenic magnetometers; magnetic signal processing.
Personnel Detection	Underwater swimmer detections.
Seismic Detection	Hostile weapon location.
ELECTROTECHNOLOGY	
Electromechanical Devices	Underwater transducer; controlled acoustic noisemakers.
ENVIRONMENTAL POLLUTION AND CONTROL	
Solid Wastes Pollution and Control	Ultrasonic sterilization.

APPLICATION AREA	EXPERTISE
Water Pollution and Control	Ship waste water control.
MATHEMATICAL SCIENCES	
Operations Research	Navy missions and systems remine, acoustic, torpedo countermeasures, diving, special and amphibious warfare.
MEDICINE AND BIOLOGY	
Physiology	Diver physiology.
NAVIGATION, GUIDANCE, AND CONTROL	
Navigation Systems	Small area navigation.
TRANSPORTATION	
Marine and Waterway Transportation	Swimmer delivery vehicles; advanced craft T&E.

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NIOSH
(Midwest Region)

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
Cincinnati, Ohio 45226

APPLICATION AREA	EXPERTISE
BEHAVIOR AND SOCIETY	
Social Concerns	Conducts research on occupational stress and on the behavioral aspects of occupational safety and health.
CHEMISTRY	
Analytical Chemistry	Develops analytical methods for chemical agents found in occupational exposures.
HEALTH PLANNING	
Environmental and Occupational Factors	Recognition, evaluation, and control of occupational safety and health hazards; development of criteria for workplace safety and health standards; operates a Clearinghouse for Occupational Safety and Health Info.; annually publishes a Registry of Toxic Effects of Chemical Substances.
INDUSTRIAL AND MECHANICAL ENGINEERING	
Industrial Safety Engineering	Conducts safety research; develops control measures and devices for application to industrial and other work sites; certifies respiratory protection equipment, detector tubes, coal mine dust personal sampler units, and sound level meters.
General	Conducts research on industrial process modifications and design; modification, and maintenance of industrial equipment; develops control technology for health and safety hazards in industrial and other work-places.

APPLICATION AREA	EXPERTISE
MEDICINE AND BIOLOGY	
General.	Conducts occupational safety and health research including toxicology; occupational carcinogens; epidemiology of occupational diseases, respiratory diseases, ergonomics, stress physiology, and behavioral factors; develops recommended programs for delivery of occupational safety and health services.

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NOO
(Southeast Region)

U.S. NAVAL OCEANOGRAPHIC OFFICE
Bay St. Louis, MS 39522

APPLICATION AREA	EXPERTISE
OCEAN TECHNOLOGY AND ENGINEERING	
Marine Geophysics and Geology.	
Oceanographic Vessels, Instruments and Platforms.	
Hydrography.	

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APPLICATION AREA	EXPERTISE
Structural Mechanics	Dynamics and statics of solid bodies, hollow shells and spheres. Kinetics, kinematics, shock and vibration, stress analysis and hydrodynamics.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Energy	Energy from marine biomass. Solar energy.
Environment	Marine environment. Urban noise and industrial noise.
Police and Fire	Propagation studies for fire department communications, speech scramblers, electronic devices for surveillance.
TRANSPORTATION	
Global Navigation Systems	Developer of Omega worldwide navigation system.
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Environmental Management and Planning	Marine pollution and urban noise abatement and control.

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NPRDC
(Far West Region)

NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER

San Diego, California 92152

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Management Information	Computer-based management information system.
Management Practice	Coordination of research and development efforts. Measurement of job performance.
Personnel Management, Labor Relations and Manpower Studies	Techniques for forecasting and costing of labor supply.
Research Program Administration and Technology Transfer	Coordination of research and development efforts. R&D applications program, Technology Transfer program.
BEHAVIOR AND SOCIETY	
Job Training and Career Development	Techniques and aids for enhancing performance. Development of training technology. Test and application of training systems. Research on acquisition of basic skills, and on information and decision processing. Selection using aptitude and vocational interest tests. Prediction of attrition.
Psychology	Attitude and motivation research. Applied psychobiology. Cross-cultural research.
Social Concerns	Research on social issues, including race relations, women in nontraditional careers, drugs, and alcoholism.

APPLICATION AREA	EXPERTISE
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Human Factors Engineering	Human factors evaluations of new and more automated systems.
COMPUTERS, CONTROL AND INFORMATION THEORY	
Computer Software	Design and development of computer programs for data processing and statistical analysis.
HEALTH PLANNING	
Environmental and Occupational Factors	Effects of shipboard environmental factors on job performance.
LIBRARY AND INFORMATION THEORY	
General	Collection of books and journals in the social sciences. Lockheed Dialog system abstract search facilities.
MATHEMATICAL SCIENCES	
Operations Research	Analysis of management systems.
Statistical Analysis	Discriminant, factor, variance, and regression analysis. Nonparametric statistics, statistical decision theory, distributions and inference.

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APPLICATION AREA	EXPERTISE
General	Resonance in magentic materials, spin-ordered magnetic phenomena, rare earth - transition metal magnetic materials, magnetic properties of amorphous materials. X-ray spectrochemical analysis, X-ray diffraction, band structure and superconductivity, plasma diagnostics. Phase transformations, crystalline defect states, microstructural effects in superconductors, elasticity, plasticity, mechanical phenomena. Radiation effects on infrared detectors, optical and electronic materials, and satellite components, solar cells, radiation belts, hardening satellite components against laser beams, radiation vulnerability, radiation curing of polymers, 2-MV-electron Van de Graaff, cobalt-60 source. Measurements on targets bombarded by MeV electron beams, deposition of energy by charged particles, high-intensity laser beam propagation, neutron transport, coherent bremstrahlungeam porpagation, neutron reactions in tissue resident elements. Materials analysis by means of charged particle beams, implantation of ions into solids energy charged particle beams, radiation effects caused by high energy charged particle beams, radiation damage in reactor materials, crystal studies by means of particle channeling techniques, ion-induced X-rays, modification of surface and subsurface properties by ion-implantation, 5 MV Van de Graaff. Preparation and development of magnetic dielectric, optic, and semiconductor materials, optical components and coatings, glass blowing, and microwave tube assembly. Surface and interface physics, cathode research and development, characterization of and growth of semiconductor, metal, and insulator films and surfaces, bonding and adhesion studies, thermionic energy

APPLICATION AREA	EXPERTISE
	conversion. Surface acoustic waves, microwave and millimeter wave integrated circuits, surface magnetostatic waves, microwave solid state sources, microwave ferromagnetic components, millimeter wave device research.
Physics.	Ion implantation technology, high and low power devices for energy conversion, field effect transistor reliability and failure analysis, MIS failure physics; radiation vulnerability and hardening, high frequency microwave devices.
MEDICINE AND BIOLOGY	
Radiobiology	Radiations for biological and medical purposes, neutron beams for cancer therapy, radioisotope production, ion-induced X rays, 75 MeV cyclotron.
ELECTROTECHNOLOGY	
General.	Silicon device processing, microelectric fabrications, integrated circuit technology.
Semiconductor Devices.	Solid state theory, electrical and optical characterization of materials, impurity and defect studies, structural and electronic properties of amorphous semiconductors, optical magneto-optical studies of surface and interfaces.

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APPLICATION AREA	EXPERTISE
PHYSICS	
Acoustics.	Anechoic coatings (theoretical and experimental studies); scattering of sound by viscoelastic structures; modulus of elasticity; dispersion of sound; nonlinear acoustics.
Fluid Mechanics.	Boundary layer transition; turbulent boundary layers; vortex fields; compressibility of viscous fluids; projectile motion; water-entry problems.
Optics and Lasers.	Far infrared laser design; adaptive optics; laser radars.
Solid State Physics.	Electrooptical, magneto-optical, and transport properties of narrow bandgap semiconductors. High field transport phenomena and magneto-phonon resonance in III-V compounds. Magnetoelastic effects in rare earth/iron compounds. Domain wall dynamics in thin magnetic films. Radiation damage in semiconductors. Transport phenomena in rare earth doped IV-VI alloys.
Plasma Physics	Propagation of electron beams. Interaction of high intensity charged particle beams with matter. Plasmas produced by high intensity X-ray sources.
Radiofrequency Waves	Dielectric millimeter wave transmission lines. High power radiofrequency generators.
General Physics.	Properties of dielectrics. Magnetic properties of rare earth/iron compounds. Ion implantation depth profiles. Surface analysis (elemental composition of surfaces). Statistical physics. Electronic noise. Physics of high pressure. Non-equilibrium statistical mechanics. Equations of state at high pressure. Cohesive energy calculations. Statistical theory of liquids and solids. Fracture Mechanics.

APPLICATION AREA	EXPERTISE
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Police, Fire, and Emergency Services	Night vision device evaluation. Small, low-power, programmable electronic timer for covert switch actuation. Graphical slide rule to estimate downwind hazard from accidental chemical discharges.
Environment	Ordnance pollution abatement; methods to eliminate waste propellant, explosive, and pyrotechnic materials and to monitor these materials in the environment. Noise abatement and control. Design and fabrication of mobile wet scrubber and mobile effectiveness of each type on various sources of fine particulates.
TRANSPORTATION	
Transportation Safety	Developing system to reduce incidence of derailment (wheel-bearing temperature and vibration sensors with automatic air-brake actuator). Developed standards for packaging hazardous materials. Mobile unit for rapid measurement of highway surface texture.
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Transportation and Traffic Planning	Self-powered vehicle detector for traffic counting and control.

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NAVAL UNDERWATER SYSTEMS CENTER
New London, Connecticut 06320

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Inventory Control	Inventory control systems, minor property, instrumentation, plant account.
Management Practice	Procurement management systems, cost analysis, management analysis, effectiveness evaluation of laboratory performance.
Management Information	Zero base budgeting, equipment management.
Personnel Management, Labor Relations, and Manpower Studies	Personnel evaluation, resource and workload analysis, project management training source.
Research Program Adminstration and Technology Transfer	R&D planning and management, identification of technical problem areas and research needs, technology transfer program.
Computer Application	Data base systems for management, PERT.
AGRICULTURE AND FOOD	
Fisheries and Aquaculture	Instrumentation.
BEHAVIOR AND SOCIETY	
Psychology	Environmental reaction and personnel interactions, job satisfaction, human behavior, adjustment, attitudes, intelligence, judgment, leadership and motivation, personality studies.

APPLICATION AREA	EXPERTISE
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Biomedical Instrumentation and Bioengineering	Extensive sensors and signal processing displays and specialized instrumentation capabilities, ultrasonic theory and transducer design.
Human Factors Engineering. . . .	Display systems, format evaluation, capacity for studies and equipment review to meet human engineering standards.
COMMUNICATION	
Common Carrier and Satellite. .	Satellite systems used for communication navigation and data links for oceanographic programs.
Graphics	Extensive graphic display capability for use in data analysis as well as system configuration experiments.
Communication and Information Theory	Submarine radio and acoustic communication systems.
COMPUTERS, CONTROL AND INFORMATION THEORY	
Computer Hardware.	Extensive use of all types of computers and computer systems for instrumentation as well as military systems.
Computer Software.	Computer programming, programming languages, large-scale systems of computer applications.
DETECTION AND COUNTERMEASURES	
Acoustic Detection	Major portion of the Center's mission related to sonar system development and acoustic data collection.

APPLICATION AREA	EXPERTISE
Structural Mechanics	Finite element analysis of complex structures.
Radio Frequency Waves.	Propagation studies.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Energy.	Solar energy, energy conservation.
Environment.	Preservation of near-shore environment, oil on water sensors.
Police, Fire, and Emergency Services	Asset management system, records management system, fuel dispensing system, emergency communications, speech scramblers.
Transportation	Life cycle costing, self cancelling ticket, traffic management guide.
General.	Intergovernmental Personnel Act Assignments to assist state and local executive and legislative agencies. Employee Technical Volunteer Services. Computer conferencing; use of TV in municipal government.

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NIGHT VISION & ELECTRO-OPTICS LABORATORIES
Fort Belvoir, Virginia 22060

APPLICATION AREA	EXPERTISE
COMPUTERS, CONTROL AND INFORMATION THEORY	
Image Processing	Image enhancement techniques, target cueing, infrared target/background data base library.
DETECTION AND COUNTERMEASURES	
Infrared Detection	Ground devices for individual use or vehicle use; airborne systems for mapping or aviator maintenance.
Optical Detection	Searchlights visible use or as aid to night vision devices.
Personnel Detection	Detection of personnel by use of image intensifier or infrared devices.
ELECTROTECHNOLOGY	
Optoelectronic Devices	Visual, infrared.
Semiconductor Devices	Integrated circuits.
MATERIALS SCIENCES	
Ceramics, Refractories, and Glass	Fiber optics, micro channels, glass substrates.
Coatings, colorants and Finishes	Optical equipment.
PHOTOGRAPHY AND RECORDING DEVICES	
Photographic Techniques and Equipment	Capability to record target signatures/ radiometric data recording.
Recording Devices	Night vision field and laboratory devices for visual and infrared systems.

APPLICATION AREA	EXPERTISE
PHYSICS	
Optics and Lasers	Theory, Design of optical equipment, optical test equipment for visual through infrared spectrums.
Solid State Physics	Electro-optical materials (receivers/detectors, emitters).
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Police, Fire and Emergency Services	Night vision devices.
Environment	Detection of pollution.
URBAN AND REGIONAL TECHNOLOGY DEVELOPMENT	
Fire Services, Law Enforcement and Criminal Justice	Night vision devices.
General	Any need or application to enhance the vision process thru electro-optics.

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APPLICATION AREA	EXPERTISE
General	Development and production; reliability support; quality assurance system safety; missile propulsion (rockets, ramjets and turbojets).
PHOTOGRAPHY AND RECORDING DEVICES	
Holography	Holographic structural analysis.
PHYSICS	
Acoustics	Acoustical sensor applications.
Optics and Lasers	Waveguide laser technology and applications; range measuring devices; synthesis, analysis and fabrication of low loss multilayer thin film optical coatings.
Solid State Physics	Solid state circuitry and electromechanical components; piezoelectric materials growth.
Structural Mechanics	Missile structure design and analysis, aeromechanics and aerodynamics of missiles using LED and laser diodes.
Radio Frequency Waves	RF device technology development; sea surface RF scatter modeling.
General	Computations and analysis as applies to propulsion propellants and rocket motors.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Energy	Studies in the areas of transportation of energetic liquid fuels.
Police, Fire and Emergency Service	Ranging communication systems.

APPLICATION AREA	EXPERTISE
General	Technology transfer; fire hazard and safety; life saving equipment for firefighters.
TRANSPORTATION	
Marine and Waterway Transportation	Studies in transportation of energetic liquid fuels.
Railroad Transportation	Transportation of energetic liquid fuels.
Road Transportation	Transportation of energetic liquid fuels.
General	Vehicles.

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ORNL
(Southeast Region)

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830

APPLICATION AREA	EXPERTISE
BEHAVIOR AND SOCIETY	Regional Resource Analysis.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Bioengineering	Biophysics and bioengineering.
Human Factors Engineering	Effects of energy technology.
ENERGY	
Miscellaneous Energy Conversion and Storage	Toroidal fusion reactor concepts; neutral beam injection; superconducting magnet development, tritium handling.
Energy Use, Supply and Demand	Improved materials and controls; appliance and insulation standards; energy use modeling.
Solar & Geothermal Energy	Low Temperature Heat Transfer; environmental assessments.
Fuel Conversion Processes	Coal conversion and combustion engineering; high efficiency thermal conversion; chemical and physical properties of coal.
General	Materials research; nuclear sciences; molecular science, heavy ion research.
Nuclear Energy Development	Fuel Cycle Research and Development Reactor Safety Research Breeder Reactor Development.
Fusion Energy Development	Toroidal Fusion Reactor Concepts Neutral Beam Injection Superconducting Magnet Development Tritium Handling.

APPLICATION AREA	EXPERTISE
Fossil Energy	Coal Conversion & Combustion Engineering High-Efficiency Thermal Conversion Chemical and Physical Properties of Coal.
Conservation	Improved Materials and Controls Appliance and Insulation Standards Energy Use Modeling.
ENVIRONMENTAL POLLUTION AND CONTROL	
Environmental Health and Safety	Environmental Effects of Energy Technology Toxicology, Carcinogenesis, Mutagenesis and Teratology. Biophysics and Bioengineering Environmental Policy Analysis.
MEDICINE AND BIOLOGY	
Toxicology	Toxicology, carcinogenesis, mutagenesis and teratology.
NUCLEAR SCIENCE AND TECHNOLOGY	
General	Fuel cycle research and development; reactor safety research; breeder reactor development.

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Telephone: (615) 574-4193
FTS: 624-4193

APPLICATION AREA	EXPERTISE
NUCLEAR SCIENCE AND TECHNOLOGY	
Radiation Effects and Hardening.	Hardening of components to withstand nuclear radiation. CONTACT: Mr. David Pierce, Chief, Technical Management Branch Rome Air Development Center Griffiss AFB NY 13441 Telephone: (315) 330-2973

ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
Alexandria, Virginia 22333

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Personnel Management, Labor Relations and Manpower Studies	Selection, classification, and recruitment of Army personnel; occupational structure, duty modules, task analysis; training management technology.
Research Program Administration and Technology Transfer	Development, review, and conduct of research program, including both inhouse and contract effort; administration of grants in behavioral and social sciences; Technical Cooperation Program (international); technical advisory service (within DOD).
BEHAVIOR AND SOCIETY	
Job Training and Career Opportunities	Training automation and simulation; group skill development; on-the-job training; career progression systems; tracking of training technology transfer; policies and processes affecting career commitment.
Organizational Psychology	Organizational effectiveness technology; OE program evaluation; team building; communication; leader training and evaluation.
Social Concerns	Human relations training development and validation; race relations/equal opportunity program management; human resource utilization; role of women in the Army; impact of family variables on soldier productivity.

APPLICATION AREA	EXPERTISE
Education, Law, and Humanities	Performance-based training and testing; self-instructional techniques and extension training; unit skill development and evaluation.
COMMUNICATION	
Communication and Information Theory	Battlefield information systems; man-machine interface; team operations with computerized command and control systems.
COMPUTER, CONTROL AND INFORMATION THEROY	
Information Processing Standards	Development of computerized information systems for research and procedures for data analysis.

CONTACT:
Dr. R. M. Sasmor
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5001 Eisenhower Avenue
Alexandria, Virginia 22333
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Autovon: 284-8641

SDEDC
(Far West Region)

USDA - FOREST SERVICE
Equipment Development Center
San Dimas, CA 91773

APPLICATION AREA	EXPERTISE
AERONAUTICS AND AERODYNAMICS	
Aeronautics	Retardant delivery, firefighting techniques, night flying.
Aircraft	Retardant tanks and gating, IR installations.
AGRICULTURE AND FOOD	
Agricultural Equipment	Plows, drills, furrowers, seeders, planters, sprayers.
DETECTION AND COUNTERMEASURES	
Infrared and Ultraviolet Detection	Infrared equipment and techniques for fire detection.
ENERGY	
Energy Sources	Wood.
Energy Use	Solar in remote environments, instrumentation, facilities.
ENVIRONMENTAL POLLUTION AND CONTROL	
Noise Pollution and Control	Forest equipment noise, recreational vehicle noise, sound abatement.
Solid Waste Pollution and Control	Solid waste disposal in recreation areas.
Water Pollution and Control	Watershed pollution control.
GOVERNMENT INVENTIONS FOR LICENSING	
Mechanical Devices and Equipment	Spark arresters, seed collection equipment, plows, drills, tree planters, and other special forestry equipment.

APPLICATION AREA	EXPERTISE
MATERIALS SCIENCES	
Corrosion and Corrosion Inhibition	Corrosive effects of chemical retardants on aircraft meterials.
NATURAL RESOURCES	
Forestry	Residue treatment and collection, fire equipment - pumps, hose, nozzles, tankers, retardants, recreation equipment, accessories for cable logging equipment, tree planters.
Natural Resource Management	Fire equipment - hose, nozzles, pumps, tankers, retardants; range improvement - drills, plow, sprayers, seeders.
Soil Sciences	Land reclamation - plows, drills, seed collection.
PHYSICS	
Optics and Lasers	Use of LLL devices in nightflying for firefighting. Also infrared use for forestry applications.

CONTACT: Dr. Boone Y. Richardson
USDA Forest Service
Equipment Development Center
444 E. Bonita Avenue
San Dimas, CA 91773

SANDIA LABORATORIES
Albuquerque, New Mexico 87185

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Engineering Systems Management	Technical management. Fiscal controls. Program direction. Component development. Quality assurance.
AERONAUTICS AND AERODYNAMICS	
Aeroballistics	Simulation, design and testing of individual and combinations of weapons and carriers.
Aerodynamics	Stability analysis, guidance and control, separation dynamics, flight simulation.
Parachutes and Decelerators	Chute design and development, fabric development, flotation and recovery devices.
Test Facilities and Equipment	Wind tunnels, flow-field studies, atomic fluid physics, and aerophysics.
General	Transport phenomena, heat shield, terradynamics.
ATMOSPHERIC SCIENCES	
Dynamic Meteorology	As affected by short term, rapid changes of state.
Physical Meteorology	Modeling and testing properties of atmosphere.
BIOMEDICAL TECHNOLOGY AND HUMAN FACTORS ENGINEERING	
Biosciences	Reactor siting, nuclear risk assessment, sterilization of space probes, sewage sludge treatment.

APPLICATION AREA	EXPERTISE
Human Factors Engineering	Man-machine interactions, interface analysis.
BUILDING INDUSTRY TECHNOLOGY	
Laminar Flow Clean Room	Construction information and licensing information.
Laminar Flow Surgical Operating Rooms	Construction information, and licensing information.
CHEMISTRY	
Analytical Chemistry	Full range of instruments, techniques and personnel.
Polymer Chemistry	As applied to engineering materials.
Photo and Radiation Chemistry	Used conjointly with other appropriate sciences, non-destructive testing, for example.
Physical and Theoretical Chemistry	As applied to material modification to withstand extreme environments.
CIVIL ENGINEERING	
Soil and Rock Mechanics	Terradynamics probes used for soil and rock structural analysis.
COMMUNICATION	
Graphics	Used in product definitions.
Communication and Information Theory	Word processing methods research.

APPLICATION AREA	EXPERTISE
Detonations, Explosion Effects, and Ballistics	Full spectrum of capabilities.
Fire Control and Bombing Systems	Full spectrum of capabilities.
PHOTOGRAPHY AND RECORDING DEVICES	
Holography	Used only as an analytic and diagnostic tool.
Photographic Techniques and Equipment	Used only as an analytic and diagnostic tool.
PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS	
Environment	As evaluated for interaction with our projects.
Transportation	Full line of technology as applied to weapon and reactor fuel shipments.
TRANSPORTATION	
Safety	As one of principal concerns in weapon and reactor fuel shipments.
Security	As one of principal concerns in weapon and reactor fuel shipments.

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TARADCOM
(Midwest Region)

U.S. ARMY TANK-AUTOMOTIVE RESEARCH & DEVELOPMENT COMMAND
Warren, Michigan 48090

APPLICATION AREA	EXPERTISE
ELECTROTECHNOLOGY	
General	Vehicle electrical systems.
ENERGY	
Heating and Cooling Systems	For military vehicles.
Engine Studies (Energy Related)	Monitoring of vehicle performance characteristics.
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	Emission controls for vehicles.
Noise Pollution and Control	For Army tactical and logistic vehicles.
INDUSTRIAL AND INFORMATION SCIENCES	
Environmental Engineering	High temperature (hot/cold) characteristics of vehicles.

CONTACT:
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U.S. Army Tank-Automotive Research
and Development Command
ATTN: DRDTA-RGI
Warren, Michigan 48090
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WALLOPS FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Wallops Island, Virginia 23337

APPLICATION AREA	EXPERTISE
ADMINISTRATION	
Research Program Administration and Technology Transfer	Research and development planning, contract management, technology transfer program.
AERONAUTICS AND AERODYNAMICS	
Aircraft	Surveillance, mapping, satellite underflight, sensor research.
Airports	Airport-aircraft interface, air traffic control, avionics systems technology, noise reduction technology, airport environmental studies, high speed turn-off techniques, approach and landing systems, and airport configuration.
General	Aircraft spin, cross-wind landings, pilot performance, procedures and aides at uncontrolled airport and safety.
ATMOSPHERIC SCIENCE	
Meteorological Data Collection, Analysis and Weather Forecasting	Atmospheric dynamics, densities and winds as measured from satellites, rockets and balloons. Ozone measurements a specialty.
ELECTROTECHNOLOGY	
Antennas	Design, applications and operations.
Electromechanical Devices	Payload instruments.
Telemetry	Design, applications and operations. Instrumented vans.

APPLICATION AREA	EXPERTISE
OCEAN TECHNOLOGY AND ENGINEERING	
Dynamic Oceanography.	Study of waves, currents, tides and air-sea interaction.
ORDNANCE	
Rockets	Building up rockets, handling and launching.

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SECTION III.

MEMBER LABORATORIES
BY GEOGRAPHIC REGION

MEMBER LABORATORIES
BY GEOGRAPHIC REGION

NORTHEAST REGION

Department of Agriculture

Forest Service

Forest Environment Project	Pennington, NJ
Forest Environment Research Unit	Amherst, MA
Forest Insect and Disease Laboratory	Hamden, CT
Forest Science Laboratory	Durham, NH
Forest Science Laboratory	Syracuse, NY
Sugar Maple Laboratory	Burlington, VT
Timber Research Laboratory	Orono, ME

Department of Defense

Air Force

Air Force Geophysics Laboratory	Hanscom, MA
Rome Air Development Center	Griffiss AFB, NY

Army

Army Research Institute of Environmental Medicine	Natick, MA
Army Armament R&D Command	Dover, NJ
Army Cold Regions Research and Engineering Laboratory	Hanover, NH
Army Electronics R&D Command	Fort Monmouth, NJ
Army Materials and Mechanics Research Center	Watertown, MA
Army Natick R&D Command	Natick, MA

Navy

Naval Air Engineering Center	Lakehurst, NJ
Naval Underwater Systems Center	New London, CT

Department of Energy

Brookhaven National Laboratory	Upton, NY

Environmental Protection Agency

Environmental Research Laboratory	Narragansett, RI

Department of Interior

Fish and Wildlife Service

Atlantic Salmon Investigations	Orono, ME
Tunison Laboratory of Fish Nutrition	Cortland, NY

Department of Transportation

Coast Guard R&D Center	Groton, CT
National Aviation Facilities Experimental Center	Atlantic City, NJ
Transportation Systems Center	Cambridge, MA

MID-ATLANTIC REGION

Department of Agriculture

Forest Service

Equipment Development Activity	Washington, D.C.
Forest Products and Marketing Laboratory	Princetown, WV
Forestry Sciences Laboratory	Blacksburg, VA
Forestry Sciences Laboratory	Morgantown, WV
Forestry Sciences Laboratory	Warren, PA
Northeastern Forest and Range Experiment Station	Upper Darby, PA
Physiology Laboratory	Beltsville, MD
Research Laboratories	Washington, D.C.
Timber and Watershed Laboratory	Parsons, WV

Department of Commerce

National Bureau of Standards	Washington, D.C.

Department of Defense

Army

Army Engineer Topographic Laboratory	Fort Belvoir, VA
Army Human Engineering Laboratory	Aberdeen, MD
Army Institute of Dental Research	Washington, D.C.
Army Medical Bioengineering Research	Frederick, MD
Army Medical Research Institute of Infectious Diseases	Frederick, MD
Army Mobility Equipment R&D Command	Fort Belvoir, VA
Army Night Vision & Electro-Optics Laboratories	Fort Belvoir, VA
Army Research Institute for Behavioral and Social Sciences	Alexandria, VA
Chemical Systems Laboratory	Aberdeen, MD
Coastal Engineering Research Center	Fort Belvoir, VA
Harry Diamond Laboratory	Adelphi, MD
Walter Reed Army Institute Research	Washington, D.C.

Navy

David W. Taylor Naval Ship R&D Center	Bethesda, MD
Naval Air Development Center	Warminster, PA
Naval Explosive Ordnance Disposal Center	Indian Head, MD

Naval Oceanographic Office	Washington, D.C.
Naval Research Laboratory	Washington, D.C.
Naval Surface Weapons Center	White Oak, MD

Health, Education and Welfare

Medical Devices Laboratory	Silver Spring, MD

Department of Interior

Fish and Wildlife Service

Eastern Fish Disease Laboratory	Kearneysville, WV
Fish and Wildlife National Teams	Washington, D.C.
Migratory Bird and Habitat Research Laboratory	Laurel, MD
National Fish and Wildlife Research Laboratories	Washington, D.C.
Patuxent Wildlife Research Center	Laurel, MD

Department of Justice

Federal Bureau of Investigation	Washington, D.C.

National Aeronautics and Space Administration (NASA)

Goddard Space Flight Center	Greenbelt, MD
Langley Research Center	Hampton, VA
Wallops Flight Center	Wallops, VA

Department of Transportation

Fairbank Highway Research Station	Washington, D.C.

SOUTHEAST REGION

Department of Agriculture

Forest Service

Coweeta Hydrologic Laboratory	Franklin, NC
Forest Fire Laboratory	Macon, GA
Forest Hydrology Laboratory	Oxford, MS
Forest Recreation Unit	Tuskegee, AL
Forest Resources Laboratory	Lehigh Acres, FL
Forest Tree Seed Laboratory	State College, MS
Forestry Recreation Unit	Clemson, SC
Forestry Sciences Laboratory	Athens, GA
Forestry Sciences Laboratory	Auburn, AL
Forestry Sciences Laboratory	Berea, KY
Forestry Sciences Laboratory	Charleston, SC
Forestry Sciences Laboratory	Marianna, FL
Forestry Sciences Laboratory	Research Triangle, NC
Institute of Forest Genetics and Forest Insect and Disease Laboratory	Gulfport, MS
Institute of Tropical Forestry	Pio Piedras, Puerto Rico
Naval Stores and Timber Product Laboratory	Olustee, FL
Silviculture Laboratory	Sewanee, TN
Southeastern Forest Experiment Station	Asheville, NC
Southern Hardwoods Laboratory	Stoneville, MS

Department of Defense

Air Force

Air Force Engineering and Services Center	Tyndall AFB, FL

Army

Army Aeromedical Research Laboratory	Fort Rucker, AL
Army Engineers Waterways Experiment Station	Vicksburg, MS
Army Missile R&D Command	Redstone Arsenal, AL

Navy

Naval Coastal Systems Laboratory	Panama City, FL
Naval Oceanographic Office	Bay St. Louis, MS

Department of Energy

Oak Ridge National Laboratory	Oak Ridge, TN

Department of Interior

Fish and Wildlife Service

Southeastern Fish Cultural Laboratory	Marion, AL
National Coastal Ecosystems Team	Bay St. Louis, MS

Environmental Protection Agency

Environmental Monitoring and Support Laboratory	Research Triangle Park, NC
Environmental Sciences Research Laboratory	Research Triangle Park, NC
Health Effects Research Laboratory	Research Triangle Park, NC
Industrial Environmental Research Laboratory	Research Triangle Park, NC

National Aeronautics and Space Administration (NASA)

George Marshall Space Flight Center	Marshall SFC, AL
Kennedy Space Center	Kennedy SC, FL
National Space Technology Lab	Bay St. Louis, MS

Tennessee Valley Authority

Tennessee Valley Authority	Chattanooga, TN

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MIDWEST REGION

Department of Agriculture

Forest Service

Forest Engineering Laboratory	Houghton, MI
Forest Insect and Disease Laboratory	Delaware, OH
Forest Products Laboratory	Madison, WI
Forestry Sciences Laboratory	Carbondale, IL
Institute of Forest Genetics	Rhinelander, WI
North Central Forest Experiment Station	St. Paul, MN
Northern Conifers Laboratory	Grand Rapids, MN
Northern Hardwoods Laboratory	LaCrosse, WI

Department of Defense

Air Force

Air Force Aeropropulsion Laboratory	Wright-Patterson, OH
Air Force Avionics Laboratory	Wright-Patterson, OH
Air Force Materials Laboratory	Wright-Patterson, OH
Air Force Wright Aeronautical Laboratory	Wright-Patterson, OH

Army

Army Construction Engineering Research Laboratory	Champaign, IL
Army Tank-Automotive R&D Command	Warren, MI

Navy

Naval Weapons Support Center	Crane, IN

Department of Energy

Argonne National Laboratory	Argonne, IL

Department of Interior

Fish and Wildlife Service

Fish Control Laboratory	LaCrosse, WI

Great Lakes Fishery Laboratory	Ann Arbor, MI
National Fish and Wildlife Health Laboratory	Madison, WI
National Power Plant Team	Ann Arbor, MI

Environmental Protection Agency

Industrial Environmental Research Laboratory	Cincinnati, OH

Health, Education and Welfare

National Institute for Occupational Safety and Health	Cincinnati, OH

National Aeronautics and Space Administration (NASA)

Lewis Research Center	Cleveland, OH

MID-CONTINENT REGION

Department of Agriculture

Forest Service

Alexandria Forestry Center	Alexandria, LA
Equipment Development Center	Missoula, MT
Forest Range and Watershed Laboratory	Laramie, WY
Forestry Research Laboratory	Rapid City, SD
Forestry Science Laboratory	Albuquerque, NM
Forestry Science Laboratory	Bozeman, MT
Forestry Sciences Laboratory	Fayetteville, AR
Forestry Sciences Laboratory	Logan, UT
Forestry Sciences Laboratory	Missoula, MT
Intermountain Forest and Range Experiment Station	Ogden, UT
Northern Forest Fire Laboratory	Missoula, MT
Rocky Mountain Forest and Range Experiment Station	Fort Collins, CO
Shelterbelt Laboratory	Bottineau, ND
Shelterbelt Laboratory	Lincoln, NE
Shrub Improvement Laboratory	Provo, UT
Southern Forest Experiment Station	New Orleans, LA
Wildlife Habitat and Silviculture Laboratory	Nacogdoches, TX

Department of Defense

Air Force

Air Force Aerospace Medical Division	Brooks AFB, TX
Air Force Human Resources Laboratory	Brooks AFB, TX
Air Force Weapons Laboratory	Kirtland AFB, NM

Army

Army Institute of Surgical Research	Fort Sam Houston, TX
Dugway Proving Grounds	Dugway, UT

Department of Energy

Los Alamos Scientific Laboratory	Los Alamos, NM
Sandia Laboratories	Albuquerque, NM
Solar Energy Research Institute	Golden, CO

Department of Interior

Fish and Wildlife Service

Fish Farming Experimental Station	Stuttgart, AR
Editorial Office	Fort Collins, CO
Denver Wildlife Research Center	Denver, CO
Fish Genetics Laboratory	Beulah, WY
Fish-Pesticide Research Laboratory	Columbia, MO
National Energy & Land Use Team	Fort Collins, CO
National Reservoir Research Program	Fayetteville, AR
National Stream Alterations Team	Columbia, MO
Northern Prairie Wildlife Research Center	Jamestown, ND

Department of Commerce

National Telecommunication and Information Administration

Institute for Telecommunication Sciences	Boulder, CO

National Aeronautics and Space Administration (NASA)

Lyndon B. Johnson Space Center	Houston, TX

FAR WEST REGION

Department of Agriculture

Forest Service

Boise Interagency Fire Center	Boise, ID
California Rangeland Project	Fresno, CA
Equipment Development Center	San Dimas, CA
Forest Engineering Laboratory	Seattle, WA
Forest Fire Laboratory	Riverside, CA
Forest Hydrology Laboratory	Tempe, AZ
Forest Hydrology Laboratory	Wenatchee, WA
Forestry Sciences Laboratory	Boise, ID
Forestry Sciences Laboratory	Corvallis, OR
Forestry Sciences Laboratory	Flagstaff, AZ
Forestry Sciences Laboratory	Juneau, AK
Forestry Sciences Laboratory	Moscow, ID
Forestry Sciences Laboratory	Olympia, WA
Institute of Northern Forestry	Fairbanks, AK
Institute of Pacific Island Forestry	Honolulu, HI
Pacific Northwest Forest and Range Experiment Station	Portland, OR
Pacific Southwest Forest and Range Experiment Station	Berkeley, CA
Range and Wildlife Habitat Laboratory	LaGrande, OR
Range Research Laboratory	Tucson, AZ
Redwoods Laboratory	Arcata, CA
Silviculture Laboratory	Bend, OR
Silviculture Laboratory	Redding, CA

Department of Defense

Air Force

Air Force Rocket Propulsion Laboratory	Edwards, CA

Army

Letterman Army Institute of Research	San Francisco, CA

Navy

Civil Engineering Laboratory	Port Hueneme, CA
Naval Biosciences Laboratory	Oakland, CA
Naval Health Research Center	San Diego, CA
Naval Ocean Systems Center	San Diego, CA
Naval Postgraduate School	Monterey, CA
Naval Weapons Center	China Lake, CA
Navy Personnel R&D Center	San Diego, CA

Department of Energy

Lawrence Berkeley Laboratory	Berkeley, CA
Lawrence Livermore Laboratory	Livermore, CA

Department of Interior

Fish and Wildlife Service

Pyramid Lake Project	Reno, NV
Western Fish Disease Laboratory	Seattle, WA

United States Geological Survey

United States Geological Survey	Menlo Park, CA

National Aeronautics and Space Administration (NASA)

Ames Research Center	Moffett Field, CA
Hugh L. Dryden Flight Research Center	Edwards, CA
Jet Propulsion Laboratory	Pasadena, CA

SECTION IV.

MEMBER LABORATORY REPRESENTATIVES BY GEOGRAPHIC REGION

MEMBER LABORATORY REPRESENTATIVES BY GEOGRAPHIC REGION

NORTHEAST REGION

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Dr. John N. Howard
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ARMY ARMAMENT R&D COMMAND
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ARMY COLD REGIONS RES & ENG LAB
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ARMY ELECTRONICS R&D COMMAND LABS
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ARMY MATERIALS AND MECHANICS RESEARCH CENTER
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ARMY NATICK R&D COMMAND
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BROOKHAVEN NATIONAL LABORATORY
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COAST GUARD R&D CENTER
Mr. Michael D'Angelo
Asst. Director for Adm. & Services
Avery Point
Groton, CT 06340
Tele: (203) 445-8501

ENVIRONMENTAL RESEARCH LABORATORY
Dr. Stanley H. Hergre
EPA
South Ferry Road
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NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER
Mr. James Woodall
Technical Advisor to the Director
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Atlantic City, NJ 08405
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NAVAL AIR ENGINEERING CENTER
Mr. Michael Palamar
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NAVAL UNDERWATER SYSTEMS CENTER
Mr. Michael Ahrens
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A/V: 636-4908

ROME AIR DEVELOPMENT CENTER
Mr. David Pierce
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TRANSPORTATION SYSTEMS CENTER
Mr. R. V. Giangrande
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MID-ATLANTIC REGION

ARMY ENGINEER TOPOGRAPHIC LABORATORY
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ARMY HUMAN ENGINEERING LAB
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ARMY MEDICAL R&D LABORATORIES
Mr. Lawrence Ware
Army Medical R&D Command
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ARMY MOBILITY EQUIPMENT R&D COMMAND
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ARMY NIGHT VISION & ELECTRO-OPTICS LABORATORIES
Mr. Richard V. Fulton
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CHEMICAL SYSTEMS LABORATORY
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COASTAL ENGINEERING RESEARCH CENTER
Mr. Thorndike Saville, Jr.
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DAVID W. TAYLOR NAVAL SHIP R&D CENTER
Dr. Basil Nakonechny
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FAIRBANK HIGHWAY RESEARCH STATION
Mr. Milton P. Criswell
Federal Highway Administration
HDV-20
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FEDERAL BUREAU OF INVESTIGATION
Dr. Eugene Rieder
Department of Justice, FBI Lab
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Washington, D.C. 20535
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FISH AND WILDLIFE NATIONAL TEAMS
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FISH AND WILDLIFE RESEARCH LABS
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U.S. Department of the Interior
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USDA-FOREST SERVICE
EQUIPMENT DEVELOPMENT ACTIVITY
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FOREST SERVICE RESEARCH LABORATORIES
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GODDARD SPACE FLIGHT CENTER
Mr. Donald S. Friedman
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Greenbelt, MD 20771
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HARRY DIAMOND LABORATORY
Mr. Clifford E. Lanham
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2800 Powder Mill Road
Adelphi, MD 20783
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LANGLEY RESEARCH CENTER
Mr. John Samos
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NASA
Hampton, VA 23665
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MEDICAL DEVICES LABORATORY
Mr. Edward Meuller, FDA/BMD
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Silver Spring, MD 20910
Silver Spring, MD 20910

NATIONAL BUREAU OF STANDARDS
Mr. James Wyckoff
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NAVAL AIR DEVELOPMENT CENTER
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Warminster, PA 18974
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NAVAL EXPLOSIVE ORDNANCE DISPOSAL
CENTER
Mr. Lionel Dickinson
Technical Director
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A/V: 364-4439

NAVAL RESEARCH LABORATORY
Mr. Emanuel Brancato
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A/V: 297-3046
Alternate:
Mr. Richard Fulper, Jr.
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NAVAL SURFACE WEAPONS CENTER
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WALLOPS FLIGHT CENTER
Mr. Gilmore H. Trafford
NASA/Wallops Flight Center
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SOUTHEAST REGION

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SECTION V.

INDEX OF APPLICATION AREAS

FEDERAL LABORATORY
SCIENTIFIC AND TECHNICAL ACTIVITIES

APPLICATION AREA	LABORATORY
ADMINISTRATION	
Computer Application	ARRADCOM, HDL, NWC, NUSC, WES
Inventory Control	CERL, KSC, LaRC, LBL, LLL, NUSC, NWC
Management Practice	AFAPL, AMMRC, ARRADCOM, CERL, HRL, NPRDC, NUSC, NWC, NWSC
Management Information	AFAPL, AMMRC, ARRADCOM, CERL, KSC, NADC, NCSL, NOSC, NPRDC, NRDC, NUSC, NWC, NWSC, WES
Personnel Management, Labor Relations and Manpower Studies	HRL, LBL, LLL, NADC, NPRDC, NUSC, NWB, NWSC, RIBSS
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APPLICATION AREA	LABORATORY
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Animal Husbandry and Veterinary Medicine	LASL, NBL, NOSC
Fisheries and Aquaculture	NOSC, NUSC, ORNL
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Cosmic Ray Research	LASL, LBL, LLL
General	LASL
Solar Physics	AFGL
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Aeronomy	AFGL, AFWL, ESRLR, KSC, LaRC, LBL, LLL
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General	HRL
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Human Factors Engineering	HEL, KSC, LaRC, LASL, MEDC, NADC, NOSC, NPRDC, NUSC, ORNL, SL
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General.	SL, WES
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Minority Enterprises	LeRC
General.	NWC
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Basic and Synthetic Chemistry. .	CSL, LaRC, LASL, LBL, LeRC, LLL, NSWC, NWC, NWSC, ORNL
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Photo and Radiation Chemistry. .	ESRLR, ETL, LaRC, LASL, LBL, LeRC, LLL, NADC, NOSC, NSWC, NWC, NWSC, ORNL, SL
Physical and Theoretical Chemistry.	AFGL, CSL, ESRLR, HDL, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NRL, NSWC, NWC, NWSC, ORNL, SL, WES

APPLICATION AREA	LABORATORY
Polymer Chemistry	AFML, BNL, HDL, KSC, LaRC, LeRC, LLL, MERADCOM, NADC, NOSC, NRL, NSWC, NWC, SL, WES
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CIVIL ENGINEERING	
Civil Engineering	AFESC CEL, CERL, FSED, MERADCOM, NWSC, WES
Construction Equipment, Materials and Supplies	AFESC, CEL CERL, MERADCOM, NWC, NWSC, WES
Earthquake Design	CEL, LLL, WES
Flood Control	WES
Highway Engineering	CERL, FHRS, FSED, NWSC, WES
Hydraulic Engineering	WES
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General	ETL, LASL
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Common Carrier and Satellite	AFGL, ITS, KSC, LeRC, NADC, NOSC, NUSC
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Graphics	ITS, KSG, NADC, NUSC, NWC, ORNL, SL, WES
Policies, Regulations and Studies	ITS
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APPLICATION AREA	LABORATORY
Social political	ITS
Verbal	ITS, NADC
General	ITS, NADC, RADC, TSC
COMPUTERS, CONTROL AND INFORMATION THEORY	
Computer Hardware	AFWL, ARRADCOM, BNL, CERL, ETL, KSC, LaRC, LASL, LBL, LLL, NADC, NOSC, NSWC, NUSC, NWC NWSC, ORNL, WES
Computer Software	AFWL, AMMRC, ARRADCOM, BNL, CERL, CSL, DTNSRDC, ETL, HDL, HRL, KSC, LaRC, LASL, LBL, LLL, MERADCOM, NADC, NAEC, NOSC, NPRDC, NSWC, NUSC, NWC, NWSC, ORNL, SL, WES
Control Systems and Control Theory	AFWL, ARRADCOM, HDL, KSC, LaRC, LASL, LBL, LeRC, LLL, NADC, NOSC, NSWC, NWC, NWSC, ORNL
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Pattern Recognition and Image Processing	BNL, CSL, ETL, HDL, KSC, LaRC, LASL, LBL, LLL, NAEC, NOSC, NSWC, NUSC, NVEOL, NWC, ORNL, SL, WES
General	HDL, NADC
DETECTION AND COUNTERMEASURES	
Acoustic Detection	AFAL, CERL, DTNSRDC, HDL, KSC, LaRC, LASL, MERADCOM, NADC, NCSL, NOSC, NSWC, NUSC, NWC, WES

APPLICATION AREA	LABORATORY
Electromagnetic and Acoustic Countermeasures	AFAL, CSL, HDL, KSC, NADC, NCSL, NOSC, NUSC, NWC, NWSC, RADC, WES
Infrared and Ultraviolet Detection	AFAL, AFGL, AFWL, BIFC, HDL, KSC, LaRC, LLL, MERADCOM, NADC, NSWC, NUSC, NVEDL, NWC, SDEDC, SL, WES
Magnetic Detection	AFAL, HDL, KSC, MERADCOM, NADC, NCSL, NSWC, NWC, WES
Nuclear Explosion Detection	AFGL, AFWL, LASL, NOSC, SL
Optical Detection	AFAL, AFGL, AMD, ETL, KSC, NADC, NOSC, NSWC, NUSC, NVEDL, NWC, NWSC, WES
Personal Detection	AFAL, ETL, HDL, MERADCOM, NADC, NCSL, NOSC, NVEOL, NWC, RADC, SL, WES
Radio Frequency Detection	AFAL, KSC, LLL, MERADCOM, NADC, NUSC, NWC, NWSC
Seismic Detection	AFGL, KSC, LASL, LLL, MERADCOM, NCSL, NSWC, SL, USGS, WES
General	BIFC, HDL, NADC, RADC, WES
ELECTROTECHNOLOGY	
Antennas	AFAL, HDL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NADC, NOSC, NSWC, NUSC, NWC, NWSC, RADC, SL, WFC
Circuits	AFAL, AFAPL, AFWL, HDL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NADC, NOSC, NSWC, NUSC, NWC, NWSC, ORNL, RADC
Electromechanical Devices	AFAL, AFAPL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NADC, NCSL, NOSC, NSWC, NWC, NWSC, ORNL, WFC
Electron Tubes	AFAL, KSC, LASL, LeRC, LLL, NWC, NWSC

APPLICATION AREA	LABORATORY
Optoelectronic Devices and Systems	AFWL, ETL, HDL, KSC, LaRC, LASL, LBL, LLL, NADC, NOSC, NSWC, NUSE, NVEDL, NWC, NWSC, ORNL
Power and Signal Transmission Devices	AFAPL, CEL, HDL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NOSC, NSWC, NWC, NWSC, ORNL, RADC
Resistive, Capacitive and Inductive Components	AFAPL, HDL, KSC, LASL, LBL, LeRC, LLL, NSWC, NWSC
Semiconductor Devices	AFAPL, HDL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NOSC, NRL, NSWC, NVEDL, NWC, NWSC, ORNL
Telemetry	WFC
General	HDL, LASL, MERADCOM, NOSC, NRL, NWC, NWSC, ORNL, RADC, TARADCOM
ENERGY	
Batteries and Components	LeRC, LLL, MERADCOM, NADC, NSWC, NUSC, NWC
Electric Power Production	IERLR, LeRC, LLL, MERADCOM, NADC, NWC, NWSC, ORNL
Electric Power Transmission	BNL, CERL, DTNSRDC, KSC, LASL, MERADCOM, NWSC, ORNL
Energy Conversion and Storage	HDL
Energy Sources	AFAPL, FSED, LeRC, SDEDC
Energy Transmission	
Energy Use, Supply and Demand	AFAPL, CERL, FED, FSR, HDL, KSC, LASL, LBL, LLL, NADC, NSWC, NWC, NWSC, ORNL, SDEDC, TSC, USGS

APPLICATION AREA	LABORATORY
Engine Studies (Energy Related)	AFAPL, AMMRC, DTNSRDC, KSC, LASL, LBL, LeRC, LLL, MERADCOM, NADC, NUSC, NWSC, ORNL, TARADCOM
Environmental Studies	AFESC, CERL, EMSLR, ESRLR, HERLR, IERLR, LASL, LBL, LLL, NUSC, NWC, ORNL, WES
Fuel Conversion Processes	AFAPL, AMD, CERL, FSED, IERLR, LASL, LBL, LeRC, LLL, MERADCOM, NOSC, NWC, NWSC, ORNL
Fuels	AFAPL, AFESC, BNL, CEL, DTNSRDC, EMSLR, IERLR, LBL, LeRC, LLL, MERADCOM, NADC, NRL, NWC, NWSC, ORNL
Geothermal Energy	ERL, LASL, LBL, LLL, NWC, ORNL, USGS
Heating and Cooling Systems	CEL, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NOSC, ORNL, TARADCOM
Miscellaneous Energy Conversion and Storage	AFAPL, AFESC, CEL, KSC, LASL, LBL, LeRC, LLL, MERADCOM, NSWC, NUSC, ORNL
Policies, Regulations and Studies	BNL, LASL, LBL, LLL, NWC
Selected Studies in Nuclear Technology	BNL, LASL, LBL, LLL, ORNL, WES
Solar Energy	AFAPL, AFESC, BNL, CEL, CERL, CGRDC, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NOSC, NUSC, NWC, ORNL
Reserves	LLL, NOSC, ORNL
General	AFESC, BNL, CERL, LASL, LBL, LeRC, LLL, NADC, NWC, NWSC, ORNL, USGS

APPLICATION AREA	LABORATORY
ENVIRONMENTAL POLLUTION AND CONTROL	
Air Pollution and Control	ADPG, AFAPL, AFESC, AFGL, AMD, BNL, CEL, CERL, CSL, EMSLR, HDL, IERLR, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NAEC, NBL, NSWC, NWC, NWSC, ORNL, TARADCOM, TSC
Ecological Assessment	CEL
Marine Pollution Technology	CGRDC
Noise Pollution and Control	AFESC, AMD, CEL, CERL, DTNSRDC, HEL, KSC, LaRC, LASL, LeRC, MERADCOM, NOSC, NSWC, NUSC, NWC, NWSC, SDEDC, TARADCOM, TSC
Solid Wastes Pollution and Control	AFESC, CEL, CERL, CSL, DTNSRDC, FSR, IERLR, KSC, LLL, NAEC, NCSL, NRDC, NWC, NWSC, ORNL, SDEDC, SL, WES
Water Pollution and Control	AFESC, ARRADCOM, CEL, CERL, CLS, CSL, DTNSRDC, ERL, IERLR, KSC, LaRC, LBL, LLL, MERADCOM, NADC, NAEC, NBL, NCSL, NOSC, NRDC, NWC, NWSC, ORNL, SDEDC, WES
Pesticides Pollution and Control	CSL, KSC, MEDC, NBL, WES
Radiation Pollution and Control	BNL, KSC, LASL, LBL, LeRC, LLL, MERADCOM, NOSC, NSWC, NWC, ORNL, RADC, SL
Environmental Health and Safety	AMRDC, HERLR, KSC, LASL, LBL, LeRC, LLL, NADC, NBL, NWC, NWSC, ORNL, SL, WES
Environmental Impact Statement	ADPG, AFESC, AFGL, AFWL, CERL, CSL, KSC, LASL, LLL, NBL, NUSC, NWC, ORNL, SL, WES

APPLICATION AREA	LABORATORY
General	ADPG, ARDC, CEL, CSL, KSC, LASL, LBL, NADC, ORNL, WES
ENVIRONMENTAL RESOURCE MANAGEMENT	
Marsh Creation for Wildlife Habitats	WES
Recreation Planning	WES
Fisheries Development	WES
Water-Quality Evaluation	WES
Water-Quality and Ecological Simulation Models	WES
Water-Resources Analysis	WES
Land Treatment of Wastewater	WES
GOVERNMENT INVENTIONS FOR LICENSING	
Biology and Medicine	BNL, KSC, LaRC, LASL, LBL, LLL, NOSC, ORNL
Chemistry	LaRC, LBL, LLL, NUSC, ORNL
Electrotechnology	CEL, HDL, KSC, LaRC, NUSC, ORNL
Food Technology	
Instruments	CEL, HDL, KSC, LaRC, LBL, LLL, NUSC, ORNL
Mechanical Devices and Equipment	CEL, FSED, HDL, KSC, LaRC, MEDC, NADC, NUSC, ORNL, SDEDC
Metallurgy	KSC, LBL, LLL, ORNL
Nuclear Technology	LBL, LLL, ORNL
Optics and Lasers	KSC, LaRC, NUSC, ORNL

APPLICATION AREA	LABORATORY
Ordnance	KSC
General	LASL, LeRC, MERADCOM, NWC, ORNL
HEALTH PLANNING	
Agency Administration and Financial Management	KSC
Community and Population Characteristics	EMSLR, LBL, LLL, ORNL
Data and Information Systems	KSC, ORNL
Economics and Sociology	
Environmental and Occupational Factors	FSR, KSC, LBL, LLL, NADC, NHRC, NIOSH, NPRDC, NWSC, ORNL, SL
Health Care Assessment and Quality Assurance	AMD,KSC
Health Care Forecasting Methodology	
Health Care Delivery Organization and Financial Management	
Health Care Measurement Methodology	KSC
Health Care Needs and Demands	KSC
Health Care Utilization	
Health Care Technology	CSL, HDL, KSC, LBL, LLL, ORNL
Health Delivery Plans, Projects and Studies	
Health Education	KSC
Health Resources	KSC

APPLICATION AREA	LABORATORY
Health-Related Costs	
Legislation and Regulations	MDL
Personal Health Care Services	KSC
Planning Methodology	KSC
General	
INDUSTRIAL AND MECHANICAL ENGINEERING	
Environmental Engineering	CERL, KSC, LBL, NADC, NSWC, NUSC, NWC, NWSC, ORNL, TARADCOM, WES
Hydraulic and Pneumatic Equipment	CEL, HDL, KSC, MERADCOM, NADC, NOSC, NWC, WES
Industrial Safety Engineering	KSC, LLL, MERADCOM, NADC, NIOSH, NWC, ORNL
Job Environment	NADC, NWC, NWSC
Manufacturing Processes and Materials Handling	AFML, HDL, KSC, LASL, LBL, LeRC, LLL, NSWC, NWC, NWSC
Nondestructive Testing	AFESC, AFML, AMMRC, CERL, DTNSRDC, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NADC, NOSC, NSWC, NUSC, NWC, NWSC, ORNL, WES
Production Planning and Process Controls	CERL, KSC, LLL, NWC, NWSC
Plant Design and Maintenance	CERL, KSC, NWC, NWSC, WES
Quality Control and Reliability	AMMRC, KSC, LASL, LeRC, LLL, MERADCOM, NSWC, NWC, NWSC

APPLICATION AREA	LABORATORY
Solvents, Cleaners and Abrasives	AFML, LLL, MERADCOM, NADC, NWC
Wood and Paper Products	FSR, MERADCOM
General	ARRADCOM, CSL, FBI, KSC, LASL, NADC, NRL, WES
MATHEMATICAL SCIENCES	
Algebra and Number Theory	LaRC, LASL, LBL, LLL, NOSC, NWSC
Analysis (Mathematics)	BNL, KSC, LaRC, LASL, LLL, NADC, NOSC, NSWC, NWC, NWSC, ORNL
Geometry	LASL, LBL, LLL, NOSC, NSWC
Mathematical Logic	AFWAL, BNL, LaRC, LASL, LLL, NOSC, NSWC, NWC, ORNL
Operations Research	AFWAL, AFWL, CERL, HDL, KSC, LASL, LBL, LLL, NADC, NCSL, NOSC, NPRDC, NRDC, NSWC, NUSC, NWC, NWSC, WES
Statistical Analysis	AFWAL, BNL, CERL, CSL, KSC, LaRC, LASL, LBL, LLL, NADC, NOSC, NPRDC, NSWC, NWC NWSC, ORNL
Systems Analysis	CSL
General	AFWAL, ARRADCOM, BNL, ETL, LASL, LBL, LLL, NUSC, NWC
MEDICINE AND BIOLOGY	
Anatomy	AMD, NOSC, ORNL
Biochemistry	CSL, HERLR, LASL, LBL, LLL, NADC, NBL, NHRC, NOSC, ORNL
Botany	ETL, FSR, ORNL, WES
Clinical Chemistry	HERLR, LBL, MDL
Clinical Medicine	AMD, HERLR, LBL

APPLICATION AREA	LABORATORY
Cytology, Genetics and Molecular Biology	HERLR, LASL, LBL, LLL, NADC
Dentistry	AMRDC
Ecology	ADPG, CSL, FSR, LBL, LLL, NOSC, ORNL, SL, WES
Electrophysiology	HERLR, LBL, MDL, NOSC
Hematology	AMRDC, MDL, ORNL
Immunology	FBI, HERLR, LASL, MDL, NBL
Microbiology	ADPG, LLL, MDL, NBL, NRDC, NWSC, ORNL, SL
Nutrition	NOSC, NRDC
Occupational/Physical Therapy and Rehabilitation	NHRC
Parasitology	
Pathology	LBL
Pest Control	MEDC, WES
Pharmacology and Pharmacological Chemistry	CSL, NBL
Psychophysiology	HERLR, NADC, NHRC
Physiology	HERLR, NADC, NCSL
Psychiatry	NHRC
Public Health and Industrial Medicine	AMRDC, LASL, LBL, NBL
Radiobiology	AMD, BNL, HERLR, LASL, LBL, LeRC, LLL, NADC, NRL, ORNL
Stress Physiology	AMD, LBL, NADC, NHRC
Surgery	

APPLICATION AREA	LABORATORY
Toxicology	ADPG, AMD, CSL, HERL, LASL, NBL, NWC, NWSC, ORNL
Zoology	NOSC, ORNL, WES
General	ARRADCOM, BNL, KSC, NIOSH, ORNL
NATURAL RESOURCES AND EARTH SCIENCES	
Cartography	ETL, FSED, LBL, USGS
Forestry	AFESC, BIFC, FFL, FSED, FSR, INT, MEDC, NC, NE, NWSC, ORNL, PNW, PSW, RM, SDEDC, SE, SO
Geology and Geophysics	AFGL, AFWL, KSC, LASL, LBL, LLL, ORNL, SL, USGS, WES
Hydrology and Limnology	LLL, ORNL, USGS, WES
Mineral Industries	FSR, LASL, LLL, USGS
Natural Resource Management	AFESC, FSED, FSR, MEDC, NWSC, ORNL, SDEDC
Natural Resource Surveys	AFGL, CERL, FSED, FSR, LASL, LeRC, LLL, ORNL, USGS
Snow, Ice and Permafrost	CEL, LeRC, NSWC, WES
Soil Sciences	AFGL, AFWL, FSED, MEDC, NWC, SDEDC, WES
General	ETL, LASL, ORNL, WES
NAVIGATION, GUIDANCE AND CONTROL	
Control Devices and Equipment	AFAL, AFWL, KSC, LaRC, LASL, NADC, NOSC, NSWC, NUSC, NWC, SL
Guidance Systems	AFAL, KSC, LaRC, NOSD, NDSC, NSWC, NUSC, NWC, NWSC
Marine Navigation Technology	CGRDC

APPLICATION AREA	LABORATORY
Navigation and Guidance System Components	ETL, KSC, LaRC, NADC, NOSC, NSWC, NWC, NWSC
Navigation Systems	AFAL, ETL, KSC, LaRC, NADC, NCSL, NSWC, NUSC, NWSC, WES
General	AFAL, LaRC, NWC, TSC
NUCLEAR SCIENCE AND TECHNOLOGY	
Fusion Devices (Thermonuclear)	LaRC, LASL, LBL, ORNL
Isotopes	AMD, LASL, LBL, LLL, NADC, NSWC, ORNL
Nuclear Auxiliary Power Systems	AFAPL, AFWL, LaRC, LASL, LLL, NSWC
Nuclear Explosions and Devices	AFWL, CEL, LASL, NSWC, NWSC, ORNL, WES
Nuclear Instrumentation	AFWL, BNL, HNL. LASL, LBL, LLL, NOSC, NSWC, ORNL, WES
Radiation Shielding, Protection and Safety	AFWL, LASL, LBL, LLL, NOSC, NSWC, ORNL, WES
Radioactive Wastes and Radioactivity	BNL, HERLR, LASL, LLL, NOSC, ORNL, WES
Reactor Engineering and Nuclear Power Plants	AFWL, LASL, LLL, NSWC, ORNL
Reactor Fuels and Fuel Processing	LASL, LLL, ORNL
Reactor Materials	LASL, LLL, ORNL
Reactor Physics	AFAPL, AFWL, LASL, LLL, NSWC, ORNL
General	BNL, KSC, LASL, ORNL

APPLICATION AREA	LABORATORY
OCEAN TECHNOLOGY AND ENGINEERING	
Biological Oceanography	LBL, NBL, NOSC, NUSC
Domestic and Polar Ice Technology	CGRDC
Dynamic Oceanography	LASL, NOSC, NUSC, WES, WFC
Effects of Ocean-Dumping of Dredged Material	WES
Hydrography	NOO, WES
Marine Engineering	DTNSRDC, NOO, NOSC, NUSC, WES
Marine Fire and Safety Research	CGRDC
Marine Geophysics and Geology	CEL, NADC, NOO, NOSC, USGS, NWC, WES
Oceanographic Vessels, Instruments and Platforms	CEL, KSC, LaRC, NADC, NOO, NOSC, NUSC, NWC
Physical and Chemical Oceanography	CEL, NADC, NOSC, NUSC, SL, WES
Search and Rescue Technology	CGRDC
Underwater Construction and Habitats	CEL, NOSC, WES
General	LBL
ORDNANCE	
Ammunition, Explosives and Pyrotechnics	ADPG, AFWL, AMMRC, ARRADCOM, CSL, KSC, LASL, NSWC, NWC, NWSC, SL
Armor	AMMRC, CSL, LASL, NSWC, NWC, WES

APPLICATION AREA	LABORATORY
Bombs	ARDC, LASL, NSWC, NWC, NWCS, SL, WES
Combat Vehicles	NWC, NWSC, WES
Detonations, Explosion Effects and Ballistics	AFWL, AMMRC, ARRADCOM, CEL, CSL, KSC, LASL, NSWC, NWC, NWSC, SL, WES
Fire Control and Bombing Systems	ARRADCOM, NADC, NOSC, NSWC, NWC, NWSC, SL
Guns	ARDC, NSWC, NWC, NWSC
Rockets	LASL, NSWC, WFC, NWC
Underwater Ordnance	LASL, NOSC, NSWC, NUSC, NWC NWSC
General	LASL, NSWC, NWC

PHOTOGRAPHY AND RECORDING DEVICES

Holography	AFAL, AFAPL, AMMRC, ETL, KSC, LASL, LLL, NADC, NOSC, NSWC, NUSC, NWC, SL
Photographic Techniques and Equipment	ADPG, AFAL, AFWL, ETL, KSC, LASL, LeRC, LLL, NADC, NSWC, NUSC, NVEDL, NWSC, SL, WES
Recording Devices	AFAL, ETL, KSC, LASL, LLL, NADC, NOSC, NUSC, NVEDL, NWSC, WES
General	KSC, NADC, NSWC

PHYSICS

Acoustics	AFAL, AFWL, CERL, KSC, LaRC, LASL, LeRC, LLL, MERADCOM, NADC, NOSC, NSWC, NUSC, NWC, NWSC, SL, WES
Fluid Mechanics	AFAPL, AFML, AFWL, HDL, LaRC, LASL, LeRC, LLL, NADC, NOSC, NSWC, NUSC, SL, WES

APPLICATION AREA	LABORATORY
Optics and Lasers.	AFAL, AFAPL, AFGL, AFWL, AMD, AMMRC, HDL, KSC, LaRC, LASL, LeRC, LLL, NADC, NOSC, NRL, NSWC, NUSC, NVEDL, NWC, NWSC, ORNL, SDEDC, SL, WES
Solid State Physics.	AFAL, AFAPL, AMMRC, ARRADCOM, HDL, LaRC, LASL, LBL, LeRC, LLL, NADC, NOSC, NRL, NSWC, NVEDL, NWC, ORNL, SL
Structural Mechanics	AFAPL, AFWAL, AMMRC, CEL, CERL, LaRC, LeRC, LLL, MERADCOM, NADC, NOSC, NRL, NUSC, NWC, NWSC, ORNL, SL, WES
Plasma Physics	AFAL, AFWL, HDL, LaRC, LASL, LBL, LeRC, LLL, NADC, NSWC, ORNL, SL
Radio Frequency Waves.	AFAL, AFGL, AMD, HDL, KSC, LaRC, LASL, LLL, MERADCOM, NSWC, NUSC, NWC, SL
General.	ARRADCOM, BNL, CSL, HDL, LaRC, LASL, LBL, MERADCOM, NRL, NSWC, NWC, SL

PROBLEM SOLVING INFORMATION FOR STATE AND LOCAL GOVERNMENTS

Economic and Community Development.	AFESC
Education.	
Energy	AFESC, AMMRC, BNL, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NOSC, NUSC, NWC, ORNL, TSC, WES
Environment.	ADPG, AFESC, AFGL, BNL, CSL, EMSLR, IERLR, KSC, LaRC, LASL, LBL, LeRC, LLL, MERADCOM, NBL, NOSC, NSWC, NUSC, NVEDL, ORNL, SL, WES
Forensics (Explosives)	ARRADCOM
Human Resources.	KSC, NADC

APPLICATION AREA	LABORATORY
Police, Fire and Emergency Service	AFESC, BIFC, FBI, FEL, FFL, KSC, LaRC, LASL, LLL, MERADCOM, NOSC, NSWC, NUSC, NVEDL, NWC
Transporation	FHRS, KSC, LASL, LLL, MERADCOM, NUSC, SL, TSC
General	ADPG, KSC, LaRC, LASL, LBL, NUSC, NWC
TRANSPORTATION	
Air Transportation	AFESC, BIFC, HDL, LaRC, TSC, WES
Global Navigation Systems	LaRC, NADC, NOSC, TSC
Marine Traffic Management	CGRDC
Marine and Waterway Transportation	DTNSRDC, MERADCOM, NCSL, NWC, TSC, WES
Metropolitan Rail Transportation	LBL, TSC
Offroad Mobility or Transportation	WES
Pipeline Transportation	HDL, KSC, MERADCOM, TSC
Railroad Transportation	MERADCOM, NWC, TSC, WES
Road Transportation	HDL, LeRC, NWC, TSC, WES
Transportation Safety	LaRC, MEDC
General	LASL, NWC, SL, TSC
URBAN AND REGIONAL TECHNOLOGY AND DEVELOPMENT	
Communications	KSC
Economic Studies	CERL, LBL

APPLICATION AREA	LABORATORY
Emergency Services and Planning	KSC, LASL
Environmental Management and Planning	AFESC, CERL, FSR, KSC, MERADCOM, NOSC, WES
Fire Services, Law Enforcement and Criminal Justice	FBI, MERADCOM, NUSC, NVEOL
Health Services	KSC
Housing	CERL, FSR
Recreation	WES
Regional Administration and Planning	
Social Services	
Transportation and Traffic Planning	AFESC, FHRS, NSWC, TSC
Urban Administration and Planning	
General	NVEDL